

P.P. 572 7/5

CLEAN MILK
for
NEW YORK CITY



REPORT
OF
MILK CONFERENCE
CALLED BY
THE NEW YORK ASSOCIATION
FOR IMPROVING THE
CONDITION OF THE POOR
105 EAST TWENTY-SECOND STREET
348-349 GRAMERCY

Opportunities for Benevolence

How the Association for Improving the Condition of the Poor uses gifts and legacies is shown in its Annual Report, which will be mailed on request; Junior Sea Breeze School for Mothers, and its campaign for clean milk, clean air and clean babies, prove the Association's knowledge of needs and its ability to organize and execute new work when funds are provided. We shall be glad to write to lawyers or to prospective givers statements of fact showing that the community needs:

Another Junior Sea Breeze;

Educational funds to tell the truth over and over again about the conditions that make children sick;

Educational crusades for pure milk, for proper administration of public baths, for relief of needy families;

The large giving of recent years has sought educational purposes. Too many believe that charitable work and education are mutually exclusive; it happens, therefore, that the lasting value of teaching done by charitable organizations is not properly recognized.

Much work done by colleges and schools is charity. The best work done by charitable societies is educational. The student whose rich father pays \$150 for college instruction that costs \$500 is no less a recipient of charity than the poor mother who buys pure milk for her sick baby for less than the cost of production; that mother is learning just as truly as is the college student. Whatever the field of its benefaction, no endowment can be truly educational that does not so apply truth to man's environment, that obstacles to human happiness may progressively decrease, and that opportunity for happiness may progressively increase.

CLEAN MILK
FOR
NEW YORK CITY

REPORT
OF THE
N. Y. MILK CONFERENCE
HELD
NOVEMBER TWENTIETH, 1906
AT
THE N. Y. ACADEMY OF MEDICINE

THE NEW YORK ASSOCIATION
FOR IMPROVING THE CONDITION
OF THE POOR

JOINTLY WITH
THE DEPARTMENT OF HEALTH
REPRESENTATIVE PHYSICIANS

AND
HEALTH OFFICERS
105 EAST TWENTY-SECOND STREET
348-349 GRAMERCY

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THE BATTLE FOR PURE MILK IN NEW YORK CITY

In 1842 Robert M. Hartley, one of the founders of the New York Association for Improving the Condition of the Poor, wrote what was then said to be the only volume in the English language devoted to the scientific treatment of milk production. In 1850 it was republished in more popular form, "The Cow and Dairy," and was a potent factor in the "Swill Milk" agitation and reform that followed. The Association was instrumental in having passed the law of 1864, which prohibited the adulteration of milk. But unenforced laws do not insure clean milk, so two years ago a movement was begun to secure more milk inspectors.

In the summer of 1905 at Commissioner Darlington's request the Association furnished the Health Department an inspector who, from April 1st to August 5th, made 2,900 inspections, examined 3,770 specimens, took 264 samples and destroyed 6,739 quarts of adulterated milk. Fifty-one arrests for adulteration resulted in the conviction of 47 dealers out of 49 tried. The Commissioner also transferred to milk inspection 150 sanitary officers from other fields for a time.

Such work by 50 or more inspectors would soon produce telling results, for after all the best possible inspector of milk is the man who sells it and who is unwilling to have his milk destroyed and to stand trial for violation of the law.

In 1906 the Association assisted in obtaining an appropriation which enabled the Department of Health to double its staff of milk inspectors, and co-operated with the *Evening World* in an enthusiastic campaign which led to a marked reduction in infant mortality, saving several hundred lives between July and September.

July and August, the deadly months for summer-sick little children, saw columns of each day's *Evening World* devoted to simple instruction and illustrated talks on the proper care of "infants," and invitations to send the *Evening*

World or the A. I. C. P. notices of illness of babies, all of which notices received prompt attention, chiefly by physicians from the Department of Health.

In this crusade Junior Sea Breeze, a summer camp for sick babies, conducted by the A. I. C. P. for Mr. John D. Rockefeller, at the foot of East 65th street, played an important part. Hundreds of babies were received and cared for, and the watchwords, often reiterated, were CLEAN AIR, CLEAN MILK AND CLEAN BABIES. Mothers were taught how to care for and feed their babies, furnishing strong proof of the value and need for such teaching, and of the eagerness with which ignorant mothers respond to wisely conducted attempts to advise and educate them.

All these efforts, however, and others by the Health Department and the County Medical Society Milk Commission and those who have intervened from time to time, excellent and helpful as some of them have been, have not sufficiently met the difficulties of the great problem. They have been sporadic, occasional, inharmonious and have not been backed by an enlightened public understanding and opinion. Some comprehensive and sustained movement was demanded that should bring into effective co-operation all the interests involved, those of production, handling, distribution and official oversight and also those of the consumer.

Representing those engaged in the production, handling and distribution of milk many of the largest dealers and owners of creameries, under the wise leadership of former Health Commissioner Lederle, organized the Association for Improving the Milk Supply of New York.

The New York Association for Improving the Condition of the Poor, feeling that the history of its connection with the subject and its relation to those of the people least able to help themselves justified their accepting the responsibility of representing the consumer, called the conference as the first step in such a movement, a conference of those best qualified by professional and official experience to suggest the wisest measures.

The Health Commissioner and twenty New York physicians connected with children's hospitals and asylums and with the County Medical Society Commission, and fifteen

health officers of New York and adjoining States and the Acting Chief of the Dairying Division of the National Department of Agriculture, became members of the Conference. The record of their deliberations is here presented.

(See Summary, pages 81-83)

PERMANENT COMMITTEE

In accordance with the request of the Conference, the Association for Improving the Condition of the Poor has invited the following named men, who have accepted appointment, to act as a committee to continue the work in co-operation with the Department of Health and the County Medical Society and all those engaged in or related to the production, handling and distribution of milk.

ERNEST HAMLIN ABBOTT
WILLIAM H. ALLEN
HUGH D. AUCHINCLOSS
E. H. BARTLEY, M. D.
PRES. NICHOLAS MURRAY BUTLER
R. FULTON CUTTING
RICHARD HARDING DAVIS
HAVEN EMERSON, M. D.
SIMON FLEXNER, M. D.
ROWLAND G. FREEMAN, M. D.
JOSEPH N. FRANCOLINI
RT. REV. DAVID H. GREER
ARTHUR M. HARRIS
E. ELIOT HARRIS, M. D.
FREDERICK TREVOR HILL
L. EMMETT HOLT, M. D.
EDWARD F. HURD, M. D.
JOHN S. HUYLER
ERNST J. LEDERLE, Ph. D.

A. J. MILBANK
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JOHN E. SAYLES
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SAMUEL SLOAN, JR.
THEODORE B. STARR
NATHAN STRAUS
E. H. VAN INGEN
PROF. H. T. VULTE
REV. WILLIAM J. WHITE
GEORGE W. WICKERSHAM
LINSLEY R. WILLIAMS, M. D.
STEPHEN G. WILLIAMS

For further information or for copies of this Report, address
A. I. C. P., 105 East 22d street, New York City.

Clean Milk for New York City

CONFERENCE

ROOM 44, N. Y. ACADEMY OF MEDICINE

NO. 17 WEST 43D STREET

November 20th, 1906, Tuesday 3 p. m. and 8 p. m.

ESSENTIAL FACTS AS TO NEW YORK CITY.

Manhattan's Infant Mortality.

(UNDER 5 YRS.)

June to September, 1904, 4,428.

June to September, 1905, 4,687.

- June to September, 1906, 4,428.

Daily Consumption of Milk.

1,600,000 qts.

$\frac{1}{4}$ in qt. bottles.

$\frac{3}{4}$ in 40-qt. cans.

"Certified," 10,000 qts.

"Inspected," 8,000 qts.

24 to 48 hours old on arrival.

Comes From

30,000 dairies, 40 to 400 miles distant.

600 creameries—105 proprietors.

10 city railroad depots.

Sold In

12,000 places, mostly from cans.

Sale of skim-milk prohibited.

Milk Law Violations, 1905.

Destroyed, 39,618 qts.

Arrests, 306.

Fines, \$16,435.

New York City Inspectors.

14 in country since July; might make rounds not oftener than once a year.

(For 8 yrs before, only 2; previously none.)

16 in City, might make rounds in 80 to 40 days.

(Before July, 14.)

POINTS OF AGREEMENT.

Cleanliness is the supreme requisite, from cow to consumer.

Cows must be healthy, persons free from contagious diseases, premises clean, water pure, utensils clean, cans and bottles sterile, shops sanitary.

Temperature is second essential.

50° F. or lower at dairy.

45° F. at creamery.

45° F. or less during transportation.

Not above 50° when sold to the consumer.

As to Pasteurization.

Not necessary for absolutely clean milk.

Destroys benign as well as harmful germs.

Disease germs develop more rapidly than in pure raw milk.

True, 155° for 30 minutes to 167° for 20 minutes.

Cost per qt., estimated, $\frac{1}{4}$ to $\frac{1}{2}$ ct.

Commercial, 165° for 15 seconds.

Cost per qt., negligible.

As to Inspection.

Some inspection needed within the City.

Some inspection needed of dairy and creamery.

WHAT NEXT STEPS SHOULD NEW YORK TAKE?

Skim-Milk.

Should its sale be permitted?

Under what conditions?

How would this affect price of whole milk?

Pasteurization.

Should pasteurization be made compulsory?

For what portion of the supply?

At whose expense?

Would it increase price of milk?

Does it render inspection unnecessary?

Does it reduce need for inspection?

Should sale of re-pasteurized milk or cream be permitted?

Should bottles show whether true or commercial pasteurization is used?

Infants Milk Depots.

Should they use pasteurized or clean milk?

Are municipal depots desirable?

Should private philanthropy support depots?

How many depots would be required in New York City?

Is Rochester experience applicable to New York City?

What educational work is possible in connection with milk depots?

Model Milk Shops.

- What may safely be sold in connection with milk ?
- Should law discourage other than model shops ?
- Are present sanitary laws rigid enough ?
- Should private capital be encouraged to establish shops ?
- Is it practicable to prohibit use of cans ?
- What provision can be demanded for proper refrigeration ?
- What for receiving milk before business hours when delivered from stations ?
- What for sterilization of utensils and bottles ?
- What for attendants' dress and care of person ?
- Would such restrictions increase price ?

Inspection.

- Is it practicable by inspection alone to secure a clean milk supply ?
- Will it protect against more dangerous forms of infection ?
- How many inspectors does New York City need ?
 - Within the City ?
 - Among country dairies and creameries ?
- How many inspectors should the State employ ?

Legislation.

- What needed as to diseased cattle ?
- What as to diseases of persons producing or handling milk ?
- Is present sanitary code sufficient ?
- Shall law require sterilization of all milk cans and bottles by milk company or creamery before returned to farms or refilled ?
- Shall sealing cans at creameries be required ?
- Shall transferring from one can to another or from can to bottle in open street be made a misdemeanor ?
- Shall pollution of milk cans and bottles be made a misdemeanor ?
- Shall bacterial standard be established ?
- Is state supervision now adequate ?
- What further legislation is needed ?
- Does present law prescribe adequate penalties ?

Education.

- Should state system of lectures before agricultural institutes be extended ?
- Should Maryland plan of traveling school be adopted as means of reaching producer ?
- What can be done to assist Teachers College in its plan for milk exhibit ?
- What can be done to teach mothers to detect unclean milk and to care properly for milk purchased ?
- How can tenement mothers keep milk at proper temperature ?
- Can nothing be done to increase the supply and cheapen the price of ice ?
- Is it desirable that a local committee be formed to cooperate with the Department of Health and County Medical Society ?

Members of Conference

<i>Health Commissioner,</i> THOMAS DARLINGTON	} <i>Joined with A. I. C. P. in issuing call.</i>
DR. ROWLAND G. FREEMAN	
DR. JOSEPH H. RAYMOND	
DR. LOUIS C. AGER	DR. L. EMMETT HOLT
DR. S. T. ARMSTRONG	DR. A. CLARK HUNT
DR. E. H. BARTLEY	COMR. ROBERT HEBBERD
DR. WALTER BENSEL	DR. A. JACOBI
DR. HERMAN M. BIGGS	DR. ALEXANDER LAMBERT
DR. JOHN WINTERS BRANNAN	MR. CLARENCE B. LANE
<i>Pres.</i> NICHOLAS MURRAY BUTLER	DR. ERNST J. LEDERLE
DR. HENRY D. CHAFIN	DR. HENRY MITCHELL
DR. H. L. COIT	DR. WM. PERRY NORTHRUP
PROF. H. W. CONN	DR. HORST OERTEL
DR. E. K. DUNHAM	DR. W. H. PARK
DR. JOHN F. FITZGERALD	PROF. R. A. PEARSON
ASST. COMR. GEO. L. FLANDERS	PROF. LEONARD PEARSON
DR. SIMON FLEXNER	MR. NATHAN STRAUS
DR. JOHN S. FULTON	DR. G. H. SWIFT
DR. GEO. W. GOLER	PROF. H. T. VULTE
COMR. WALTER D. GREENE	COMR. C. A. WIETING
DR. CHARLES HARRINGTON	DR. LINSLY R. WILLIAMS
DR. E. ELIOT HARRIS	DR. JOSEPH E. WINTERS

Association for Improving the Condition of the Poor

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PERCY R. PYNE, <i>Vice-President</i>	LEONARD E. OPDYCKE, <i>Secretary</i>
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JOHN SEELY WARD, JR., <i>Vice-President</i>	WILLIAM H. ALLEN, <i>General Agent</i>
GEO. W. WICKERSHAM, <i>Vice-President</i>	

Conference Committee

GEO. W. WICKERSHAM, <i>Chairman</i>	
PERCY R. PYNE	RICHARD WELLING

Physicians and Health Officers

Members of Conference

- Health Commissioner*, THOMAS DARLINGTON } *Joined with*
 DR. ROWLAND G. FREEMAN } *A. I. C. P.*
 DR. JOSEPH H. RAYMOND } *in issuing call.*
 DR. LOUIS C. AGER, L. I. College Hospital and Pathologist Nor-
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 DR. S. T. ARMSTRONG, *Supt.* Bellevue Hospital.
 DR. E. H. BARTLEY, L. I. College Hospital and Attending
 Physician Sheltering Arms Nursery.
 DR. WALTER BENSEL, *Asst. Sanitary Supt.* N. Y. City Depart-
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 Graduate Medical School and Hospital.
 DR. H. L. COIT, Newark, N. J., *The Father of Certified Milk.*
 PROFESSOR H. W. CONN, *Professor Bacteriology*, Wesleyan Uni-
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 DR. E. ELIOT HARRIS, *Visiting Physician* City Children's
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 DR. ALEXANDER LAMBERT, *Consulting Physician* N. Y. In-
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 MR. CLARENCE B. LANE, *Asst. Chief Dairying Division*, Bureau
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 DR. ERNST J. LEDERLE, former New York City *Health Com-*
missioner.
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 DR. W. H. PARK, *Director Research Laboratories* New York
 City Department of Health.
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 MR. NATHAN STRAUS, *Straus Milk Depots.*
 DR. G. H. SWIFT, *Visiting Physician* St. Mary's Free Hospital
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 PROF. H. T. VULTE, Teachers College.
 DR. LINSLEY R. WILLIAMS, *Chief of Clinic*, Department of
 Medicine, Vanderbilt Clinic.
 DR. JOSEPH E. WINTERS, *Professor Children's Diseases Medical*
 Department Cornell University.

PROCEEDINGS.

Mr. Cutting: Gentlemen and Ladies—The conference has been called to discuss a question of vital importance, it seems to us, yet one which is so far of but very little popular interest. It is easy enough to agitate this City on the subject of Rapid Transit or the lower price of gas, but when it comes to a question of the milk supply it is the hardest thing in the world, it seems, to create any interest; largely because of lack of information on the part of people otherwise well informed.

It is sixty years ago, I think, since the Association for the Improvement of the Condition of the Poor, which I represent, took the first steps to secure a little better milk supply in this City, and it kept up the agitation through the newspapers and in other ways until the Law of 1864 was passed which prohibited the adulteration of milk.

The Association has been derelict in not carrying on the agitation since that time, and in not pursuing it as it ought to, but it has awakened again to its responsibility and has asked you to come here to-day in order to discuss this very important question.

Now, there is a great deal to talk about this afternoon. There will be, I suppose, considerable difference of opinion upon a variety of subjects, but I am sure we are all one in purpose. We don't want to waste time at all about what we have to do. I would be glad if somebody would nominate a permanent Chairman.

Mr. George W. Wickersham was nominated and duly elected Chairman.

The Chairman: Ladies and Gentlemen—If agreeable, I would ask Mr. Sayles to act as Secretary of the meeting. We are not here to waste time in oratory and I suggest the rule be that the discussion be limited to the questions suggested in the leaflet which is in your hands, and I would also suggest that so far as possible gentlemen limit their remarks so as not to exceed ten minutes.

In order to start the discussion I will ask Dr. Lederle to speak upon the first question, skim milk.

Dr. Lederle: Mr. Chairman—Before taking up the special subject assigned to me, permit me to say a few words on the general milk conditions of our city.

Your very commendable movement may be misunderstood, especially by those coming from other cities, unless we start fairly by stating what the present condition of our milk supply is.

I am fairly conversant with conditions both from the standpoint of the sanitary authorities and that of the dealer. The milk supply of our city was never in as good condition from every standpoint.

Our Health Department is doing more work and better work than ever before both in the city and country. There has never before been done the amount of work at the creameries and among the farmers. I am in a position to know that there never before has been so much independent work done in the line of improvement at the creameries and in transportation and general improvements, and never has there been such effective co-operation with the Department of Health by the milk dealers.

The sensational statements of universally bad conditions of our milk supply are false, unfair and an injustice to the authorities, the dealers and to our city. We are all agreed that there is still room for very decided improvement, but intelligent suggestions for such improvement can only be made on the basis of accurate information as to existing conditions.

Skim Milk.	New York City is the only place in the world, I believe, where it is a crime to sell skim milk, even when properly labeled.
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One result of this official prohibition is that our people are convinced that skim milk is injurious or unwholesome, a most unfortunate and false impression.

When our milk laws were first enacted, skim milk was prepared by removing the cream from whole milk which had been allowed to set for from twelve to twenty-four hours. The skim milk was necessarily old, stale and not in

fit condition to transport. The introduction of centrifugal machines for separating the cream from milk has made it possible to send skim milk to the market as fresh as the whole milk, thus removing the only possible valid objection to sale of skim milk as such.

Competent authorities tell us that an absolute prohibition against the sale of skim milk must be unconstitutional.

This question has never been seriously taken up for the following reasons:

The authorities have not opposed a change in the law on account of supposed or actual difficulties of regulating the sale and preventing fraud.

The milk dealers are not insisting upon a change because there is no unanimity of feeling among them of the desirability of such change, mainly on account of the uncertainty of the effect it would have on the milk trade.

The consumer has not interested himself, probably because he has not appreciated the great value of skim milk as a cheap food. Let us consider what effect this law has had.

New York City is, of course, the market for almost all of the milk produced in our State. The complete exclusion of skim milk from this market has resulted in the development of a very large industry, the preparation of casein, a dry curd which is used principally as a glue substitute in the manufacture and coating of paper, in the preparation of cold-water paints and for many other technical purposes.

Eighty-five creameries in this State produce annually: 5,000,000 lbs. of dry casein from 80,000,000 quarts of skim milk, or 222,000 quarts of skim milk per day.

The creamery averages five cents per lb. for the sale of this casein.

100 lbs. of skim milk make 3 lbs. casein, or the skim milk is worth for casein $12\frac{3}{4}$ cents (approximately) per can of forty quarts.

Furthermore, unless the sugar is extracted from the whey, a further equivalent amount of food is lost. We are diverting five millions of pounds of valuable food product to purely technical uses as a glue substitute and paint.

As to the value of skim milk as a food it will hardly be

necessary for me to dwell at length at this time, although it is not generally appreciated.

When taken with bread or used in cooking it forms a very nutritious addition to our food. Two and one-half quarts of skim milk will furnish the same amount of protein and have about the same fuel value as a pound of "round steak."

Round steak about 16 cents.

Skim milk (@ 3c.) $7\frac{1}{2}$ cents, including cost of handling, icing, transportation and delivery in New York City, all of which would be practically the same as for whole milk.

Skim milk could be used for the following purposes: Cracker bakers; bakers in general; in restaurants and household; for cooking purposes; preparation of a substitute of equal or greater value; for buttermilk; as a beverage for adults.

I would suggest that in order to make it possible to use skim milk for manufacturing purposes, solely at first, the Sanitary Code be amended permitting the issuing of permits to bring skim milk into the city under special regulations to be used for the purposes stated. Gradually, as the matter has been more closely studied and is better understood, this milk could be sold for use for general purposes, excepting the feeding of infants and children.

As to what effect the sale of skim milk will have on the price of whole milk, it is not possible to predict with any degree of certainty. Those most competent to give opinions believe that the effect will be in a large measure to tend to keep down the price of whole milk, which, on account of increasing shortage, increase in cost of transportation, the more liberal use of ice at much greater cost, the greater expenditures following the enforcement of more stringent regulations on the farm, at the creameries, during transportation and in the retail stores, must soon materially advance.

In view of all this, it would seem particularly fitting that the Association for Improving the Condition of the Poor should take up the investigation of this phase of the milk question in earnest and its proper solution will, I feel certain, bring about very beneficial results to the people.

Dr. Goler: So far as Dr. Lederle has gone, I am heartily in accord with what he has said, but it does not seem to me that he has touched on one very important phase of the question, and that is, under what conditions the sale of skim-milk should be permitted.

That, it seems to me, is the important question, a very important one. Should we permit skim-milk to be sold upon wagons along with whole milk? Milk men are human. Would they not sell skim-milk for whole milk?

What effect would the sale of skim-milk have, for instance, upon the price of whole milk?

I would like very much to ask Dr. Lederle under what conditions he would permit the sale of skim-milk.

Dr. Lederle: Why, as I suggested in the first place, I would not permit its general sale. I would allow it to come in for manufacturing purposes only; for the use of bakeries and for baking purposes only, under special permit; and on further investigation, if it was thought desirable, and I think it will be found desirable, allow it to come in for general use under restrictions.

I don't know that we are ready to go into all the details of that. As for the effect on the price of whole milk, I think I have suggested that competent authorities are of the opinion that the effect will be to hold down the advance that is sure to come in the price of whole milk.

Dr. Freeman: It seems to me ridiculous that skim-milk should have to be dried in order to be brought into New York City. Skim-milk, after it is dried, may be brought in, whereas skim-milk unchanged is prohibited from entrance, although it is a very valuable food.

I see no reason why it shouldn't be carried in wagons as other milk is carried. It is no more dangerous than the water that goes into other milk. (Laughter.) There can be no possible objection to its introduction. The prohibition of the sale of skim-milk is an injustice to the producer and the consumer. I think that neither skim-milk nor any other pure food product should be prohibited from being sold provided it is plainly labeled. It seems to me that this is a matter for the inspectors to take care of.

Commissioner Darlington: I think this a very serious question, indeed. The entrance of skim-milk into the city would no doubt reduce the price of pure milk; and it is a good food under certain circumstances; but is the city prepared to appropriate a sufficient amount of money to watch the sale? Would it be possible to maintain the number of inspectors it would be necessary to have under the present number of milk permits now issued in the city of New York? It is very difficult as it is to watch the milk. It would be much more difficult if skim-milk was generally sold.

You have simply to look at the bottom of the program which has been distributed here, where it says: "Milk-law violations, 1905; arrests, 806, and fines, \$16,435," which speaks volumes for the difficulties already encountered. It would be endless if skim-milk was generally sold.

Furthermore, there is the danger of giving skim-milk to infants. The difficulty does not alone consist in bacteria in the milk. When we modify milk for babies it is that we shall have more cream and less casein, and skim-milk is largely casein and water.

Does anyone think that of the twelve thousand permits in the city of New York a large percentage of those people would not endeavor to sell that milk improperly labeled? How many inspectors would it take to follow that up?

No doubt it is a good food, but there are grave dangers in its general sale. You cannot make people good entirely through law. Conviction comes from the heart, though public opinion is a powerful factor. It would take a long time before the 12,000 people with permits would have sufficient moral sense so that every one of them would sell pure milk and never attempt to sell the skim-milk in place of it.

Mr. Cutting: May I ask a question of those who are more familiar with the social side of it, as to whether if skim-milk was sold in New York for three cents a quart, even if properly labeled, a very large percentage of the poor would not prefer to buy skim-milk for their use all the time, simply because it was cheap? Wouldn't that be a

fatal thing for us to do, to open an opportunity for that sort of thing? The very sale of the milk, it seems to me, even with the label, is a guarantee of its food value. The poor, I am afraid, would take unwise advantage of it.

The Chairman: The Chair would suggest that perhaps the relative nutritive qualities of the two might be touched upon.

Dr. Freeman: As to the nutritive value, the real nutritive value is in the skim. The fat furnishes heat, but the real value is in the proteid of milk. Although we feed milk with a higher percentage of fat than is present in the cows' milk, still it is not the fat we really rely upon to keep the child alive. As to the use of skim-milk instead of whole milk—well, some of them use tea for young children—I think the skim-milk would be much more valuable than the tea. (Laughter and applause.)

Dr. Fulton: It occurs to me that the city of New York has possibly extinguished an important sort of food, especially for the tenement-house portion.

At all events, we find in Baltimore that a considerable part of the output of skim-milk goes into the families of the foreign-born people who make a great variety of hand cheeses of it. It may be undesirable to feed babies with skim-milk. At the same time, I should think that certainly preventing its sale for anything else is merely an administrative problem and should be readily solved.

I do think it is an unusual spectacle for a large city to cut these people off from a sort of food which I am sure is important chiefly because it is cheap.

The skim-milk, I say, in Baltimore goes into the hand cheeses made by the Jews, Lithuanians, and so forth. It is a food which is capable of being preserved for many months.

Dr. Harris: Now, I am impressed with the value of skim-milk as a food, and its increased food value over beer and other things that are used (laughter) and at the same time I am alive to the fact that it is not a proper food to

give to infants and children. In Dr. Lederle's paper he spoke of it being used by cracker manufacturers, bakers, etc., and not by children. I am in favor of such use of skim milk.

The question is whether the present force would be sufficient to keep it out of the retail stores?

Commissioner Darlington: It would not. I think it could be controlled so far as the sale to bakers is concerned, special consignments to certain places.

Prof. R. A. Pearson: If I mistake not, everyone has admitted that there is some good in skim-milk, but there have been two objections raised to it. One is that it is a food which young children should not have, and therefore its sale should not be permitted.

It seems to me that it is not for us to act upon that suggestion because there are a great many foods young children should not have, and if we attempt to exclude them the list would be a long one. We should not begin with skim-milk.

The other objection is the one raised by Dr. Darlington, and that is the difficulty of preventing the sale of skim-milk by the 12,000 dealers who are selling whole milk. I appreciate that this is a very important objection. Now, I wish to ask the Commissioner of Health if that objection could be overcome if the sale of skim-milk were permitted only at places where whole milk is not sold, separate licenses being issued for the sale of skim-milk only and exclusively. The point is that the two products should not be sold in any case by the same person.

Commissioner Darlington: I do not know. We would have to think of that very carefully.

The Chairman: We will pass to the **Pasteurization.** next subject, "Pasteurization." I had intended to call upon Mr. Nathan Straus, if he were present, to open this discussion. I believe, however, that he is represented here to-day by Dr. Green.

Dr. Green: Mr. Straus intended to be here to-day. He had prepared a statement, which I shall be pleased to read.

Mr. Straus' Paper: The greatest task confronting humanity to-day is the conquering of disease.

We have met to discuss what we can do in our feeble way in the direction of solving a question of vital importance, and I say to you that the phase of the problem which we are to consider has not received the attention its surpassing needs deserve.

I have been criticized for preaching the danger of our milk supply, for saying that the most destructive of all agents of disease and death is the common, ordinary milk offered for consumption in our cities. I welcome this criticism, because it is only through discussion and agitation that the public is aroused.

I think it requires no argument to prove that our milk supply, even with all the precautions thrown around it, needs further and radical reform, but I do not believe that it is generally understood to what degree it is responsible for suffering and death, particularly among young children.

You know that in this country one child out of every three that are born dies before the age of five is reached, and I claim that the majority of these deaths *are preventable*.

I can conceive of no work that should appeal more strongly to a people or to a government than the saving of infant lives.

Scientists are devoting their best efforts throughout the world to finding remedies for the prevention and cure of the world's greatest scourge, the most dreaded and deadly of diseases—Consumption, well named the "White Plague."

Last year in the International Tuberculosis Congress held in Paris, Professor von Behring expressed the opinion that one of the most useful results of the Congress was the acceptance of the fact by all the delegates that bovine tuberculosis is transmissible to human beings, the bovine bacilli being more dangerous even than are the human bacilli.

Fourteen years ago I lived in the Adirondacks, and to be sure of having pure milk for my family, we kept our own cow. One day the cow fell sick and died suddenly. We thought she had been poisoned and called in a veterinary surgeon. He found the cause of her death easily enough—her lungs had been eaten away with consumption.

So you see that when we thought we were drinking pure, wholesome milk, we were taking into our systems the germs of disease. From that time, no more raw milk was used in our family.

That was fourteen years ago. Now I will tell you of a recent experience to prove to you the correctness of my convictions. I met one of our prominent butchers a short time ago, and we talked about pure food. I asked him to tell me something about the condition of the cows slaughtered for this market. He told me that out of a herd of one hundred and eleven that he recently bought, twenty-seven were found to have diseased lungs—were far gone in consumption. He also said that about ten per cent. of all cows bought for slaughter in this market were afflicted with the same disease.

I asked his permission to use this information, and though for obvious reasons he did not wish me to use his name, he sent me a letter, which I have as proof of the statement.

Another fact which has come to my knowledge is that in one of the greatest dairy farms of this State, stocked with high-bred, registered cows, last year over one hundred had to be killed because they had developed consumption. This occurred on a farm where to my personal knowledge the most scrupulous cleanliness prevails, and where everything is conducted on the most thorough scientific principles of sanitation. If I had been asked, "Is there any milk brought to this market fit for use in its raw state?" I should have unhesitatingly recommended the milk from this farm as the best.

Not long ago I had a letter from a very wealthy resident of this city, a man whose name you all know. He wrote me that to prevent any possibility of the milk provided for his little son being impure, he had built a new cow barn at his country place, and at great trouble and expense selected eight of the finest and best bred young cows, registered Alderneys, for his private use. One of the cows took sick shortly after, and he had her killed. A post-mortem developed that the cow had tuberculosis. He then had the remaining cows tested by a representative of the State Agri-

cultural Department, and he pronounced *five of the remaining seven cows tubercular*.

And he cried out to me: "Where and how can I get milk fit to give my child?"

Thirteen years ago I was asked by the Editor of the *Forum* to write an article for his publication on the necessity for pure milk.

I did so, and my article was returned to me with the request that I eliminate a certain paragraph—he said it was too radical, too daring. The paragraph was as follows, which was finally printed as a foot note:

"Milk is not always good in proportion to the price paid for it, nor free from the germs of contagion because it has come from cattle of aristocratic lineage. The latter quality, as recent experience has shown, carries with it a special susceptibility to tuberculosis."

Thirteen years ago I believed that the pasteurization of milk was the only remedy. To-day I KNOW IT.

In June, 1895, Dr. Jacobi, in endorsing the use of pasteurized milk, wrote me: "There is nothing so instructive as a success, and a single practical proof speaks louder than any number of volumes." Therefore, I will cite the case of a public institution where the death rate of the children was so high that it became a public scandal. This was on Randall's Island. Though the city had their own herd of cows, which were kept on the Island, carefully tended and apparently in perfect health, they did not succeed in reducing the death rate below forty-four per cent. At that time I was President of the Health Board, and the institution came under my direct charge. I had a chance to study the appalling conditions that still prevailed there. After I had resigned from this office, encouraged by the results I had already obtained in the city, I installed on the Island a complete plant for the pasteurization of milk. In the very first year of its operation, the death rate of the children made the astonishing drop of from 44 per cent. to 20 per cent. Remember, there was no other change made either in diet, hygiene or management of the institution. The rate was later reduced to the still lower figure of 16.5 per cent.

Just think of the enormous saving of lives if pasteurization were generally adopted.

I have done as much as one man could to establish and promote the use of pasteurized milk everywhere, but all that has been accomplished is merely a fraction of the good that could be done were the supply of pure milk made a municipal function as much as the supply of pure water. There can be no question but that the supply of milk everywhere should be pasteurized, not only that intended for infants, since the use of raw milk for adults is almost equally fraught with danger.

It has been said that the pasteurization of milk will not destroy the tubercle bacillus, but this assertion must have been made by some one not familiar with the process of pasteurization, or not familiar with the proofs on the subject.

Scientists agree that a temperature of 165 deg. for twenty minutes will destroy the tubercle bacillus. Dr. Smith, of Boston; Pearson, of the University of Pennsylvania; Bang, of Copenhagen; Russell, of the University of Wisconsin; Moore, of the New York State Agricultural Department, and Ravenel, of Philadelphia, all eminent scientists, are a unit in agreeing upon this. And as in the process of pasteurization the milk is heated to a temperature of 165 deg., and kept there for twenty minutes, it follows that the tubercle bacillus must be destroyed.

If it were possible to secure pure, fresh milk direct from absolutely healthy cows in any large city, there would be no necessity for pasteurization.

If it were possible to establish a system of public inspection and examination of milk which would prevent the supply of polluted milk, there would be no cause for pasteurization.

If it were possible by legislation to obtain a milk supply from clean stables, after a careful process of milking, to have transportation to the city in perfectly clean and close vessels, then pasteurization would be unnecessary.

But I am compelled to conclude, after years of study, that these conditions are *absolutely impossible* of attainment.

Corrective laws have been passed, medical societies have directed their energies to a betterment of conditions, but I do not think it will be denied that a very large proportion of the milk now sold in New York City is unfit for consumption.

No agitation for a better milk supply, by whatever methods attempted, can be without good result, but I have preferred to direct my work to the attainment of positive results, and these I know can be attained by pasteurization only.

While efforts directed toward the prevention of contamination at the source of supply are attended by many difficulties, and the net results, therefore, are extremely small, such efforts should not be abandoned. On the contrary, even though milk be pasteurized, and I believe the time will come when the entire milk supply of all large cities will be pasteurized, there should be no relaxation of vigilance to prevent initial contamination.

In the course of years human ingenuity may have found a means of entirely eliminating disease; it is for us to do our share with the light that is given us.

Scientists play their part in adding to the sum total of human happiness, but the layman has no unimportant rôle. I believe the solution of the question before us is not scientific but practical. *It is not cure—it is prevention.*

Public opinion is the greatest force in human achievement to-day, and when the public have been sufficiently aroused to the fact that the prevention of disease is quite as essential as the erection and maintenance of hospitals for the cure of disease, we shall have the first requisite for intelligent legislation on this subject. Since the fact can easily be demonstrated that the conditions surrounding the milk supply of our city entail an appalling penalty of suffering, disease and death, surely prejudice, ignorance and criminal neglect of obvious precautions must have had their day.

Health Commissioner Greene: I think that the gentleman in his paper struck the keynote, and that is that if we have a proper inspection of the milk at the dairy and proper inspection of the dairy, and proper bacteriological examin-

ation of the milk, it is not necessary to have it pasteurized. Until that time arrives I believe it should be pasteurized.

In the Department of Health in Buffalo, I might say we have a bacteriological examination of 300 samples of milk every month. On the 19th of October the bacteriological examination showed streptococci and pus in a sample of milk sent in from the country. I sent a man out there the next day and he reported that one of the cows had a dilation of the udder and that there was pus in the milk.

On November 13th, another sample very much the same was reported to me as containing streptococci and pus. I sent an inspector in whom I had the greatest confidence to the farm, and he came back with this report: That he found one cow with one of the teats giving a milk which was almost transparent, like water; the other three a milk which to the ocular inspection and to taste, looked and seemed perfect. He, however, brought that milk in to be examined. The cow's udder was perfectly healthy; there was no sore nor any ulcer of any kind. The cow was in good flesh, but yet there was a large amount of pus and streptococci in this milk. That had never been discovered in the city of Buffalo before this year, because we never had a bacteriological examination of milk, and we have been drinking that kind of milk ever since we have had milk coming into the city. If that cow was tubercular, if the lacteal ducts contained tuberculosis, people drinking that milk were very likely to be infected with tuberculosis.

If we have proper inspectors and inspections, then pasteurization is not necessary if the milk is clean, but there are two cases which go to show the necessity for inspection and for pasteurization if not properly inspected.

Commissioner Darlington: Under the present rules of the Sanitary Code of the Health Department, the pasteurization of milk is permitted provided it is labeled "pasteurized."

The query with me is, Should not the public do their own pasteurizing rather than have the city do it? There may be some people who do not want their milk pasteurized. I know of some. Even suppose it is a menace to

the community. Shall we pasteurize all our foods? There is danger from other foods. Shall we insist that they be partially cooked before they are sold?

I think that is a legal question. It seems easy to say pasteurize milk, and cook it to 165 degrees, but suppose somebody does not want it that way? Milk can indeed be sold that way provided it is labeled and everybody can buy it. Is it not the first duty of the city to go into the State and see that every place is clean; go to the source of the milk supply, to see that the water is pure; the dairies clean; the cows in good condition; then to look after the creameries, and then the places where the milk is sold, and after that has all been done, if it be found that milk is not a proper food for infants because of the bacteria which it contains, take up the question whether or not the city should pasteurize it.

Dr. Bartley: The method of pasteurization that is adopted now is to heat it up to the pasteurizing point and suddenly cool it in an apparatus so it does not remain at a temperature of 165 or any other elevated temperature for more than a few seconds.

It is news to me to know that the Health Department requires that all milk that is pasteurized must be so labeled. I know that a great deal of the milk that is sold in the city is pasteurized as described and not labeled.

Dr. Goler: I come from a small town in the western part of the State having about 200,000 people. For the last five or six years I have persistently and I think consistently fought the commercial pasteurizing of milk.

Whatever people may want to do with milk after they get it home may be none of our business for the present, but if you look into the dairies from which the companies draw the milk for commercial pasteurization and see the conditions under which the milk is produced, I think that no one of you would be willing, so far as our experience goes, to have commercial pasteurization open in your own cities for your own consumption.

It seems to me that the commercial pasteurization of milk is a direct invitation to the milk men to be just as dirty as they may be, if they only have some proper silver-plated apparatus that will remove the globules of dirt and hair and more or less solid materials, at the same time leaving the soluble material in the milk.

Dr. Freeman: In considering this subject, Mr. Chairman, it seems to me we should know what commercial pasteurization is. Pasteurization was adopted after it was found that milk was full of germs, and it was found that boiling injured the milk and changed its chemical condition and that children fed upon it did not do as well. It was found that bacteria could be killed by lowering the temperature, but only when continued for a long time. One hundred and sixty-seven degrees for thirty minutes was thought sufficient. Later investigation showed 155 F. for thirty minutes was also sufficient, and that was so low that no change took place in the taste of the milk, although most of the germs in the milk were killed. That sort of pasteurization is the kind that is used in households.

It was also established that the milk should be kept in the vessel in which it was pasteurized, and that the milk should be cooled and kept cool, and should not be kept more than twenty-four hours after pasteurization.

Now, in commercial pasteurization, the milk is run through a tube that heats it to 167 F. for a few seconds, and then is rapidly cooled, put into other receptacles and marketed. Such milk is found, on bacteriological examination, to contain many bacteria. As commercial pasteurization is used now, I believe it is almost entirely as a means of marketing dirty milk, milk that would not otherwise keep sweet until it reached the consumer.

The use of commercial pasteurization should be condemned from every point of view. I think the Board of Health should be congratulated for recently passing rules that such milk should be so labeled, because undoubtedly pasteurized milk was before that sold as raw.

The Chairman: One of the questions in the program

is whether pasteurization will render inspection unnecessary or reduce the need for it. I would like to know what the Health Commissioner thinks of that.

Commissioner Darlington: I don't think that it should, but I think that it likely would.

Commissioner Greene: Whether pasteurization would decrease the inspection work, is that the question? I don't think that in inspecting milk the inspector ever looks for bacteria. If they are found at all it is in the laboratory. The inspection as I understand it is generally taken in the streets, in the factories and at the stations and is simply for adulterations that can be detected by ordinary apparatus or by the ordinary inspector and not by the expert in the laboratory.

Our experience is that inspection does not cover the question that you are now discussing. Would it not be a good plan to begin at the other end and pasteurize the cow? Is it a good thing to allow the fountain to be constantly defiled and try to strain the stream at the other end? That is my view of it. You have 1,700,000 cows in the State of New York and what Mr. Straus said in his paper in regard to the cows that he examined is true, no doubt, for we have found it in a good many places.

I know of a herd of cows in this State from which certified milk has been sold. They were exercising all precautions to keep only the very best cows in that herd. When they tested for tuberculosis one of the cows, apparently healthy and wholesome, responded to the test, and the man who owned the cow, apparently one of the best in the herd, said: "I believe that this test is not accurate, but I will kill that cow and find out." They killed her, and ingrowing somewhere I think they found nearly a pint of pus indicating the presence of this disease.

Now, would it be a bad idea to begin at the other end and sterilize, and weed out these cows and some way provided that they shall not come into the State. I have asked for this a great many times and they tell us it costs too much money. How much money is it going to cost to

sterilize all the milk of the State and force people to use pasteurized milk whether they want it or not?

Commissioner Darlington: I don't want to talk all the time but I want to say that that is just what the Board of Health in the city of New York is trying to do. We have commenced at the other end, with all of the creameries throughout the State of New York and those that supply New York City in northern Pennsylvania, northern New Jersey, western Massachusetts and Connecticut have all been inspected twice. Changes have been ordered and they have made the changes. Five hundred dairies weekly are being inspected by New York City inspectors, and it includes the cows, the stables, the barns, the water supply and everything in connection with those dairies. We have gone with our inspectors to these places just the same as if they were inside the city of New York, and changes have been ordered and these changes are being carried out to-day.

Dr. Harris: May I ask Dr. Darlington how he enforces the authority of his inspectors outside of the city of New York?

Commissioner Darlington: . It is very simple. When a man does not make these changes we prevent the milk being sold here as a menace and danger to the city.

Dr. Harris: I would like to know how he knows the milk coming into New York City?

Commissioner Darlington: . It is shipped direct on the railroad.

Dr. Harris: It seems to me that this is a question for the education of the public, and the enforcement of any rule or law for pasteurization at this time will not meet with public approval. There is not a general public sentiment to-day in favor of the pasteurization of milk, therefore to form any law, any rule or regulation for the pasteurization of milk seems to me to be a waste of time. What is needed is education on the subject and then let public opinion decide. For myself I would rather have n.y milk pasteurized.

Commissioner Darlington: The pasteurization that doesn't pasteurize is the present state of the process.

Dr. Park: I think we should define more clearly what we mean by commercial pasteurization. If we are talking about pasteurization and mean three or four different things, and if we do not distinguish between ordinary milk and bad milk, we can, while really agreeing with each other, apparently disagree.

Now, I only know a little of how commercial pasteurization is carried on in New York City, but I believe from what I do know that when a firm pasteurizes milk commercially, it does not necessarily allow less clean milk to be used, although undoubtedly the contrary is often true. When they don't pasteurize it, on hot days or various days, some of the milk would sour, or the milk would sour in the hands of the people keeping it that night or the next morning, and these dealers found that by commercially pasteurizing their milk it kept better through the twenty-four hours.

We must limit in some way the term pasteurization. Probably it would be fair to insist on the raising of the milk to a temperature of 160 F. for half a minute or to an equivalent effect of lower heat for a longer time. Such a treatment will destroy probably 95 per cent. of the ordinary bacteria. It will destroy many typhoid germs; will destroy probably most of the scarlet fever germs. It will not destroy more than a small percentage of the tubercle bacilli.

I don't believe that our Health Commissioner or Dr. Bensel or any one would say that this year or next year or in five years all the milk coming into New York City in the summer time can be used raw safely. The raw milk coming into the city in summer would, in my opinion, be improved by having it heated to 160° for one minute in the early hours, just before its distribution. At all seasons the milk would be rendered safer, as far as transmission of contagious diseases, by such treatment. For infants we must, when possible, seek not only a pure milk, but a longer exposure to heat, and this should be given from stations properly safeguarded.

To sum up, I think it is as much a mistake to call commercial pasteurization a fraud as to say that commercial pasteurization does as much as proper pasteurization. The fact that milk is pasteurized does not greatly lessen the need for farm inspection. The pasteurizing plants themselves should be under the constant supervision of the sanitary authorities.

Dr. Lederle: I know in Berlin and Copenhagen, pasteurization is very generally used. At one source in Berlin which supplies probably 75 or 80 per cent. of all the milk used, they have adopted pasteurization, and not pasteurization which we know in this city as commercial pasteurization, but what is scientifically known as pasteurization. They have had that in use for about three years.

In Copenhagen perhaps longer, perhaps four or five years, pasteurization has been used for the milk supply of the city. There the pasteurization is probably not quite as complete as in Berlin.

In reply to inquiry by mail in regard to some of the questions raised in the program under "Pasteurization" and as to the effect upon ordinary bacteria and disease germs of commercial pasteurization continued 30 seconds instead of the usual 15 seconds or less, answers by letter were substantially as follows:

Should pasteurization be made compulsory? Out of twenty-three there were twenty-one "No," one "Yes, unless the tuberculin test used twice yearly shows the herd to be free from tuberculosis"; one "Yes, if clean milk cannot be secured otherwise."

Would it render inspection unnecessary?

Twenty-three straight "No."

Would it reduce need for inspection?

One "Yes"; twenty straight "No"; one "Somewhat"; one "Possibly, not necessarily."

What effect is produced upon ordinary bacteria and disease germs by pasteurization at a temperature of 165 degrees F. continued 30 seconds followed by rapid cooling?

In reply to this only twelve replied specifically.

These answers were received: Dr. Bartley: "Many killed, but not as satisfactory as longer exposure—does not kill tubercle bacilli." Dr. Ager: "Most destroyed—not tubercle bacilli," "not certain putrefactive organisms." Dr. Armstrong: "Would kill some, the more pathogenic bacteria and spores would resist such exposure." Prof. Conn: "Many are killed—disease germs mostly, but not wholly—tuberculosis germs not necessarily destroyed." Dr. Freeman: "I know of no evidence that such temperature and time kills the pathogenic germs we fear in milk." Dr. Goler: "Kills some of the ordinary bacteria and delays souring, but disease-producing organisms not materially affected." Dr. Harrington: "All souring bacteria are killed; the more important peptonizing bacteria are not all killed, and may continue multiplying and producing deleterious changes in the milk, which is apparently sweet and in good condition." Dr. Harris: "Very little in 30 seconds." Dr. Heberd: "The growth of less resistant bacteria will be checked." Dr. Oertel: "Little or none." Dr. Park: "Kills 90 per cent. of all the bacteria, 95 per cent. of typhoid and diphtheria—much smaller proportion of tubercle bacilli." Prof. Vulte: "Kills useful and harmless bacteria—does not materially injure disease bacteria."

The Chairman: I will ask Dr. Goler to open the discussion on "Infants Milk Depots."

Dr. Goler: Keeping as closely as possible to the questions laid down in the program, I believe the first subject is "Should infant milk depots use pasteurized or clean milk?"

I think I can best discuss that part of the question by telling something very briefly of Rochester's experience in the use of clean milk in its milk depots.

We have about 200,000 people. Some ten years ago we began to use, after the manner of Mr. Straus, some infants milk depots with pasteurized milk at first, and we had such difficulty in getting clean milk, that after two or three years we thought we would devote our attention to a clean-milk supply.

Now, the plan at Rochester which we use is really quite a simple one. We have no farm; we own no cows. We have simply a traveling apparatus that altogether, taken all in one, is worth about a thousand dollars. The plant consists of a portable booth with a platform running out from it, and outside of that portable booth where the milk is bottled there is a temporary sink and running water, and sewer, and back of that a tent used for sterilizing cans and utensils and not milk, and still back of that a tent where a nurse has her being for the time that the milk station is running.

This central station on the farm is used chiefly for the purpose, first, to furnish to sub-stations in the city a supply of clean milk, and second to act as an educational example to farmers in the surrounding country.

When this plan was started it was the idea to take this portable plant from place to place, putting it down on one farm for one year, and on another farm for another year, and thus try to have what Maryland has carried out in a much larger way, a kind of portable educational example to the milk men.

(Dr. Goler here exhibited several photographs.)

Now, the milk is produced on the farm under cleanly conditions, and there is a nurse who superintends, with necessary assistants, the production and bottling of the milk. Then the milk is shipped already iced to a number of sub-stations; we have but four in our comparatively small city, and each one of these stations is attended by a trained nurse supplied with a table and refrigerators filled with ice and supplied with twine and paper, and the children are brought to her and she provides them with the necessary advice in the absence of advice from the physician, and with milk for the baby, and with a little booklet which is printed in several languages, and with which everybody is more or less familiar. Now, the idea, as I said a moment ago, is to provide for the education of the farmers through the work upon the farm, and for the education of the mother from the sub-station.

I think it is perfectly plain that such stations are desirable, both the stations in the country, and these sub-stations in the city, for out from both of them must come a great deal of good.

The question, "Should private philanthropy support depots?" I hardly know how to answer. It seems to me that it is the duty of the municipality to take care of its infants, the children and the adults—in fact, the people are practically the only assets that a municipality has, and if it is not the duty of the municipality to take care of its people, then the municipality has no duty at all.

The question of whether private philanthropy should support depots—it would probably seem better in a large city like this that the aid of private philanthropy should be sought, but that the aid of private philanthropy should entirely sustain the depots instead of the municipality, I don't believe at all.

"How many depots would be required in New York City?" I am not familiar enough with the conditions to advance an answer to that question.

"Is Rochester experience applicable to New York City?" It seems to me that you are the best judges of that, but the educational work is the important work, it seems to me, at both ends, both in the stations and on the farm. We have sought to teach the farmer. (Dr. Goler here exhibits photographs of farmers' apparatus, accompanied with explanatory remarks.)

Isn't it the duty of the city to provide this education? What we want more than anything else is education for the mother and education for the farmer.

I always have a hesitation in mentioning the death rate. Figures can't lie, but liars can figure. That is an old story that we are all familiar with, but we began this work in 1897, and after a period of ten years, taking all the deaths from all causes, whether due to scarlet fever or to milk infection, our percentage of deaths under five years of age, from all causes, was 33 per cent. For the last ten years it has been 20 per cent. in round numbers, and it fell immediately just as soon as we began to establish this work. Along with this has come other work that I ought not to speak of in this connection, but that diminution began immediately and has continued ever since.

A Voice: Will the gentleman tell us what the present death rate is?

Dr. Goler: The present death rate from all causes is about 15 and a fraction.

Dr. Ager: I am much interested in this subject because for the last three or four years I have had much to do with the milk in the Children's Aid Society of Brooklyn. If the first question means, should we distribute only pasteurized milk from infants milk depots, I think we should, for pasteurized milk will keep longer.

The Chairman: I would like to ask for information. One of the speakers a little while ago, if I understood him, said that pasteurized milk was more likely to be contaminated afterward than unpasteurized. I understood the last speaker to say that one reason in favor of distributing pasteurized milk only was that the people who took it had no proper facilities for taking care of it.

Now, perhaps, I misunderstand the two statements, but they don't seem to me to exactly hang together. I would like to ask the Doctor what he has to say to that?

Dr. Ager: In our experience, Mr. Chairman, for the first 24 hours the modified pasteurized milk will keep better than the unpasteurized milk. I have looked into that very carefully, and I have found that the certified milk that we get in Brooklyn will spoil more quickly under those conditions than the pasteurized milk.

The Chairman: You mean spoil from changes of temperature?

Dr. Ager: Yes.

The Chairman: But how about the effect of contamination under improper handling or unclean vessels?

Dr. Ager: That does not enter into the question of milk depots, because, as we distribute milk in Brooklyn and as they do in New York, the milk is ready for feeding.

The Chairman: In feeding bottles?

Dr. Ager: Yes.

Dr. Williams: I would like to mention something in regard to the educational part of the work. I think that all the doctors who practice among the poor people are agreed that the thing they need most of all is education. Dr. Goler has told us of the way this view was accepted in Rochester, and to a limited extent last summer it was accepted in New York.

At 65th street the Association has a summer camp known as "Junior Sea-breeze," established through the generosity of Mr. John D. Rockefeller. There the mothers were given lessons by physicians and nurses who were shown how to prepare the food for the children and how to take care of the babies. The thing I want to bring out is just this, that mothers did not have to be persuaded to come there; they came readily and gladly and most of them learned intelligently.

I am sure that any campaign in the future in regard to education, if properly carried out, will be taken very readily by the mothers and will reduce the mortality more quickly than any other means.

Dr. Ager: I notice that the question of educational work comes in under this subject. We have tried various methods in Brooklyn. Our first year we had volunteer physicians connected with each depot. We had a card system. The name of every applicant for milk was put on the cards with various questions in regard to sanitary matters. These cards were distributed to the volunteer physicians and every case was visited by those physicians and statistics collected, and so far as possible instructions given to the mothers. We only used it that one year.

Since then we have had paid nurses in connection with every station; they visit every patient and instruct mothers in the best way of taking care of their children, not only in the preservation of the milk, but other sanitary matters. We find that the result is very satisfactory. Near the end of the summer we tried having conferences with the mothers in connection with some of the depots and this worked out with varying success, depending somewhat upon nationality.

Dr. Holt: In the great need of some definite information in regard to exactly what the results were in infant feeding in tenement houses, the Rockefeller Institute and the Health Department made a few years ago a series of observations upon infants in the tenements. They were published and are doubtless familiar to most of you here but it may not be out of place to bring a few of these facts again to your notice, showing what actually occurred in the tenement houses; what various forms of milk the people were using for infant feeding, and what the results were with those that were most used.

The things chiefly used are: (1) condensed milk; (2) milk which was procured from the groceries, which was known by the people as "store milk"; (3) to a much less degree, a fair grade of bottled milk; (4) milk from the different distributing stations or milk depots—those of Mr. Straus and others connected with various dispensaries or diet kitchens.

An attempt was made to secure continuous observations upon children fed in these different ways. The different groups of children were followed up by physicians, who made regular weekly visits, for an average period of three months. Observations were made during a portion of two summers and for one winter season. The children were not selected, except that care was taken that all the infants were well at the time of beginning observations.

In winter it was found that the kind of milk employed did not, to any important degree, affect either the amount of illness or mortality in the infants. But in summer, it made an enormous difference. We found in the first place that, as was expected, the highest mortality and the greatest amount of illness occurred with the dirtiest milk, viz., that which was purchased at the corner grocery and in which the bacteria ran up into the millions. That the next poorer results were obtained from condensed milk. We found that by far the best results of all were obtained from the milk from the milk depots.

The figures are as follows: Grocery milk was the food of 79 infants who were observed during the summer. Of

these, only 21 did well; 23 did fairly; 20 did badly, and 15 died; in other words, good results in 56 per cent. of the cases, bad results in 44 per cent. In nearly all of these cases, the milk was heated in some way before feeding; usually, it was raised nearly to the boiling point.

Condensed milk was the food of 70 infants observed during the summer. Of these, only 22 did well; 20 did fairly; 14 did badly, and 14 died; or 60 per cent. good results and 40 per cent. bad results.

Milk from the milk depots was the food of 145 infants observed during the summer. Of these, 84 did well; 33 did fairly; 24 did badly; 4 died; in other words, 81 per cent. of good results and 19 per cent. of bad results.

There were 98 children observed during the summer who were fed upon bottled milk purchased by the consumer. Of these, 37 did well; 27 did fairly; 29 did badly; 9 died; in other words, there were 61 per cent. of good results and 39 per cent. of bad results.

In the above groups the condition of the infants at the time the observations were begun were, in the different groups, practically the same, and their surroundings were very similar. Care was taken to have these factors as nearly uniform as possible.

It seemed to us that one of the greatest things in accounting for this good result from the milk depot was, in the first place, that the mother got no more milk than she could use for the day; secondly, that the milk was given in the bottles from which it was to be fed; thirdly, there was no more than an amount proper for one feeding put in the bottles; fourthly, some attempt was made to adapt the milk to the child's needs. Thus, the less that was left for the mother to do, and the more done by someone who intelligently comprehended what the problem was, the more successful were the results.

Although the numbers included in these investigations are not large, yet the accuracy of the observation and the long time these children were followed, make them of great value.

Had the figures been ten times as great, I believe they

would only have emphasized the statements made and the conclusions reached by Dr. Park and myself at that time, as we analyzed the data collected by the various observers, which were, that at the present time the use of the milk from the milk depots gives better results in the tenements than anything else employed. Experience since then has, I believe, shown even more clearly the advantages among the very poor of having as much as possible of the selection, preparation and handling of milk for infants done for them, leaving to mothers who have neither the time, the intelligence nor the proper facilities, the smallest amount of responsibility.

To carelessness and ignorance in feeding are due almost as much illness among infants as to the quality of the milk supplied. Hence it is that education and instruction in all matters relating to the hygiene of infants are quite as important to insure results as a good, clean milk.

Dr. Northrup: There is no baby on earth so valuable to-day as the French baby. There is no example of such strenuous effort to reduce infant mortality, on this round globe, as in France. They have taken up the work there in a way that is only comparable to the concerted effort the Japanese made to wipe away the insult which the Christian nations gave them some fifteen years ago.

France is now attempting to reduce the infant mortality on a scale never seen before! Among the things that are very instrumental in that line is a milk dispensary, to which they have given a very fanciful name, "La Goutte de Lait." The different dispensaries are all known as Les Gouttes de Lait. I visited the largest one in Paris. I dare say no one in this room has taken the trouble to go to Belleville. One might as well, for pure sight-seeing interest, go to some of the humdrum districts of Brooklyn and take a long carriage ride, get there, and see nothing after they get there. (Laughter.) It is the deadly dull mediocrity of laboring Paris. I would never have gone except that Dr. Variot was good enough to take me in his carriage.

Now, the most striking thing in all that organized effort to reduce infant mortality and save those precious French

babies, because they need them, is the effort to instruct the mother. They started out first with the dispensaries in connection with maternities for curing babies when they were sick. Dr. Dufour started out to do one more thing, to keep them from getting sick. By him the first Goutte de Lait was founded.

I won't speak of the milk, because I fear it will open a discussion beside the mark. It is sterilized milk, in bottles, which comes from the Pyrenees Mountains a long journey back, in ice, and suits them, and the results are good.

The interesting point is the great organized effort to instruct the mothers. Those mothers are requested and urged and induced by every means to bring the baby once a week to La Goutte de Lait. It is a regular happy family, somewhere about five hundred in the family and all there at once. It is extraordinary the effort that is made to instruct them. At the first consultation—"Consultation of Nurselings," as the name is—the mother of the child is taken into a private room where the history is taken and its heredity and everything about it recorded. This is supposed to be a confidential interview, which will not take place again. Thereafter it is preferred that this woman shall be in the large salle in order that she may see other women having their babies weighed, hear the comments, and learn as much as possible. There is very healthy competition as to who shall have the healthiest baby and who shall gain the most, the whole constituting an organized central office for sending out information in all directions.

More interesting and astonishing than all else is the interest and organized effort in France in educating all mothers of all babies as to how they can keep their babies from getting sick and reducing general infant mortality.

I should think that that came in harmony with quite a number of things that are being said. The whole thing is, as I have explained, but the result of perfect unanimity and largely because it is organized effort to keep them free from sickness.

Commissioner Darlington: Permit me to repeat what I have frequently said in public, and that is, that I am in

favor of depots for pasteurized milk for infants. We have often taken occasion to commend the work of the Straus depots. Undoubtedly it is a good work, as you have heard from Dr. Holt. As to whether or not this should be continued by the city of New York or by private philanthropy, I am unable to say. I doubt if we could do the same as in Rochester and have a trained nurse at every one of these depots. I believe there is, however, a great educational work possible in connection with such depots. I think that is the main work, that people should be educated by circulars touching these matters, teaching the mothers how to take care of their babies.

Dr. Holt has shown us the great difference between getting the milk from one of these central stations and having the mother at home handle it. The difference is very great indeed.

I can only say as I commenced, that I am heartily in favor of depots for the modification and pasteurization of milk for infants.

Dr. Green: (Representing Mr. Straus.) More than three-fourths of the time is devoted to talk, talk, talk to the women. The physician is explaining to the mothers every day what to do for their children. They are handed pamphlets in various languages.

The Chair: Dr. Green, won't you state for the benefit of the assembly what your work is at the Straus station?

Dr. Green: My work is first to see the milk is perfectly received and handled, although there are others to look after that. My work is to see the mothers; to tell them how to take care of their children; what milk to give them; how much to give them; when to stop; when to change, so the children will receive a succession of milk, so the stomach is strengthened and they are able to take stronger milk when the time comes to take it. If left alone to themselves the mother would give a formula to a child a month old and give the same to a child of ten months. The work is to give them advice, tell them when to start and when to stop, etc.

Professor Pearson: In view of all that has been said in regard to the benefits of pasteurized milk and education of mothers, I think it fair to ask if the benefits may not be due more to education than to the pasteurized milk?

It would be rather difficult for me to decide from what I have heard here whether the pasteurization of milk is advisable or not. Perhaps it is education that brings the good results.

Dr. Green: The fact that these children thrive on the milk they receive must be due a great deal to the pasteurization.

In reply by mail to the question from the program under Infants Milk Depots: "Should they use pasteurized or clean raw milk?" nine advised "clean raw milk," without qualification; one "clean raw pasteurized"; four "pasteurized," without qualification; four "pasteurized" "in summer," "in warm weather," "properly in depots," "under present conditions"; three "both," "but clean in either case," and "depending on season and condition of child."

The committee feels that it is desirable, for the purpose of having this report convey a correct impression, to say that many of those opposed to the general commercial pasteurization of the city's milk supply are entirely well disposed to or strongly in favor of the true pasteurization of milk to be provided in feeding bottles for infants through infants milk depots or other agencies.

**Model
Milk
Shops.**

The Chair: If there are no further remarks on this subject we will pass to the next, which is "Model Milk Shops." I will call upon Prof. R. A. Pearson to open the discussion on that subject.

Professor Pearson: Owing to the lateness of the hour, and the fact that I think there is less difference of opinion on this than on any other subject. I shall make my suggestions very quickly.

I think it would be best if the milk could be sold in company with very few other things. Certainly it would

be fair to exclude from the store where milk is sold substances that would contribute dirt or dust, or mold, and I think it should be possible to enforce such a regulation in New York City.

If it were not possible, however, I would offer this as a suggestion, that a special booth be constructed in the grocery store where milk is to be sold, with absolutely nothing but milk to be allowed in it. The booth might be two and one-half feet square or three feet square, or two by five feet, and accommodate two or three cans, a little space enclosed so that the dirt and dust which is constantly being raised in these general grocery stores should not come in such close contact with the milk.

Decidedly the law should discourage unsanitary places where milk is sold. It seems to me that present laws are sufficient, if their enforcement is rigid enough. I am not perfectly familiar with the laws governing the sale of milk in New York City. Generally it is better enforcement rather than new laws that is required.

It seems to me that private capital or philanthropy can well be used for the establishment of milk shops, but I do not want to see it enter into this field to such an extent that it will take the place of business. If model shops can be established in a modern manner by private capital and the people who are in the business are induced to follow this example it will be a most desirable solution.

I do not think it is practicable to prohibit the use of cans. The great objection to the use of cans, even if they are properly cleaned in the first place, is that flies and dirt have opportunity to get into them, and the dipper which is constantly removed and replaced does much to contaminate the milk. Other devices might be used; a can with a lid which would be open only when held open might be substituted, or a faucet at the lower end of the can could be used for drawing off the milk. Of course, it would be well if we could get rid of the cans, but I am considering the practical side of it.

As to refrigeration of the milk, the present requirements, it seems to me, are sufficient. I understand that

the milk must be held at all times under 50 degrees. If it could be held at a still lower temperature it would be an improvement. I doubt, however, if this would be practicable.

Every establishment where milk is sold should have, and should be ready to show to the inspectors, at any time, apparatus for the sterilization of the utensils used in handling the milk. It might be no more than a wash boiler, standing upon the stove and used for sterilizing milk utensils only. The utensils could be put into that and boiled for a length of time. It is not necessary to use steam.

I do not think, Mr. Chariman, that these requirements would necessarily increase the price of milk.

Mr. Clarence B. Lane: I should like to outline briefly the system we have in Washington. Score cards have been in use some time for scoring dairy products, but I do not know that any attempt has been made to score city milk plants. We found it necessary to have some system to get at the exact conditions and point out the good and bad points and to show the managers of city milk plants and milk shops just where they stand. We wanted to give each plant a rating and point out where improvements were needed.

We prepared in the Dairy Division a score card for this work and are now cooperating with the Board of Health in improving the milk supply of Washington. The plan is working out very satisfactorily so far, and I think it is going to be the means of improving the city milk plants and bringing them up to a high standard. A copy of the score card is on following pages.

We find in almost every case that the manager is very willing to talk over the conditions and to have the inspector point out his faults. The inspector is often asked to come again and rescore the dairy after the improvements are made.

This seems to be a good way to cooperate with the milk dealers; to appeal to their pride and to bring about an improvement of the conditions under which milk is sold.

DIRECTIONS FOR SCORING.

MILK ROOM.

LOCATION.—If not connected by door with any other building, and surroundings are good, 10; when connected with other rooms, such as kitchens, stables, etc., make deductions according to conditions.

CONSTRUCTION.—If good cement floor, and tight, smooth walls and ceiling, and good drainage, allow 10; deduct for cracked or decayed floors, imperfect wall and ceiling, etc.

CLEANLINESS.—If perfectly clean thruout, allow 15; deduct for bad odors, unclean floor and walls, cobwebs, unnecessary articles stored in room, etc.

LIGHT AND VENTILATION.—If window space is equivalent to 15% or more of the floor space, allow 5; deduct 1 point for every 3% less than the above amount.

EQUIPMENT:

Arrangement.—Allow 3 points for good arrangement; if some of the equipment is out of doors or so placed that it can not be readily cleaned, make deductions according to circumstances.

Condition.—If in good repair, allow 3 points; make deductions for rusty, worn-out, or damaged apparatus.

Construction—

Sanitary: If seams are smooth, and all parts can be readily cleaned, allow 2. Deduct for poor construction, from sanitary standpoint.

Durability: If made strong and of good material, allow 2. Deduct for light construction and poor material.

Cleanliness.—If perfectly clean, allow 5 points; make deductions according to amount of apparatus improperly cleaned.

MILK.

HANDLING.—If milk is promptly cooled to 50° F. or lower, allow 12 points; or if pasteurized at a temperature of 149° F. or above and promptly cooled to 50° or lower, allow 12 points. Deduct 1 point for every 2° above 50°. If milk is pasteurized imperfectly, deduct 6 points. If milk is improperly bottled or otherwise poorly handled, make deductions accordingly.

STORAGE.—If stored at a temperature of 45° F. or below, allow 8 points. Deduct 1 point for every 2° above 45°.

SALES ROOM.

LOCATION.—If exterior surroundings are good and building is not connected with any other under undesirable conditions, allow 2; for fair conditions allow 1; poor conditions, 0.

CONSTRUCTION.—If constructed of material that can be kept clean and sanitary, allow 2; for fair construction allow 1; poor construction, 0.

EQUIPMENT.—If well equipped with everything necessary for the trade, allow 2; fair equipment, 1; poor equipment, 0.

CLEANLINESS.—If perfectly clean, allow 4 points; if conditions are good, 2; fair, 1; poor, 0.

WAGONS.

GENERAL APPEARANCE.—If painted and in good repair, allow 2 points; for fair condition, 1; poor, 0.

PROTECTION OF PRODUCT.—If product is iced, allow 3 points; well protected but not iced, 1; no protection, 0.

CLEANLINESS.—If perfectly clean, allow 5; good, 3; fair, 2; poor, 0.

**UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
DAIRY DIVISION,**

SANITARY INSPECTION OF CITY MILK PLANTS.

Owner or manager: _____ Trade name: _____

City: _____ Street and No.: _____ State: _____

Number of wagons: _____ Gallons sold daily: { Milk, _____
Cream, _____

Permit or license No.: _____ Date of inspection: _____, 190

	SCORE.		REMARKS.
	PERFECT.	ALLOWED.	
MILK ROOM.			
Location _____	10		
Construction—			
Floor (3) _____	10		
Walls and ceiling (3) _____			
Drainage (4) _____			
Cleanliness _____	15		
Light and ventilation _____	10		
Equipment—			
Arrangement (3) _____	15		
Construction—			
Sanitary (2) _____			
Durability (2) _____			
Condition (3) _____			
Cleanliness (5) _____			
MILK.			
Handling (12) _____	20		
Storage (8) _____			
SALES ROOM.			
Location (2) _____	10		
Construction (2) _____			
Equipment (2) _____			
Cleanliness (4) _____			
WAGONS.			
General appearance (2) _____	10		
Protection of product (3) _____			
Cleanliness (5) _____			
Total _____	100		

Sanitary conditions are—Excellent: _____ Good: _____ Fair: _____ Poor: _____

Suggestions by inspector: _____

Signed: _____

We expect soon to establish a standard score which probably will be 70 or 75 points, and the city will insist that milk shops come up to this standard, so this is really a method of bringing the places where milk is handled and sold to a reasonable standard of cleanliness.

The Chairman: Dr. Lane, won't you give us an individual instance of the changes that have taken place in an establishment of your own city, in a model shop that you have in Washington?

Mr. Lane: The principal changes that have taken place in the milk plants of our city have been largely in the sanitary conditions. Cleaner floors, cleaner walls, less cobwebs on the ceilings, less rubbish, etc. In many cases the buildings are poorly located and sometimes connected with horse stables, wagon sheds and kitchens. These are the lines of improvement along which we have been working.

The Chairman: To what extent have these conditions been complied with in Washington?

Mr. Lane: We have just begun this work, sir, covering some twenty-five milk shops.

The Chairman: Do they take readily to the suggested change?

Mr. Lane: The managers of the milk plants have taken very readily to this system so far. They are given a copy of the score card when the inspector is through. In fact, the manager goes through the plant with the inspector in most cases and scores along with him. In some cases he is asked to score his own plant and frequently he scores it lower than the inspector himself.

The Chairman: How long has it been in vogue?

Mr. Lane: We have been at this work about three months.

The Chairman: And, roughly speaking, how many shops have taken it up?

Mr. Lane: We haven't finished the inspection as yet, but I would say that at least one-half have promised to make the improvements suggested, and some of them have already been rescored on application to the inspector and they have increased their scores at least twenty points in a few cases.

I might mention briefly some of the ways they have improved. Occasionally you would find an ice-box that perhaps was constructed of wood and had stood in the room where the milk was handled for four or five years and begun to decay and occasionally the walls and ceiling would be coated with milk. Instances of this sort, of course, decrease the score very much, and by using plenty of white-wash, by improving the drainage and by putting in cement tanks instead of wooden ones they have been able to increase the score. Some of them have put in more light; better equipment; exchanged the old milk cans and pails for new ones, and in fact, made improvements all along the line.

I might say that in some cases we have found the salesroom has been in very close proximity to the living room, and on going to purchase milk a woman would come to the salesroom with a child in her arms and wait on the customer. These things are very objectionable, because if there are any infectious disease in the house the customer might take it home. Our score card provides for a considerable reduction in the score where the salesroom is directly connected with the kitchen or some other part of the house. I don't know that this plan would work in New York. I merely suggested it as being used in Washington.

Dr. Hunt: In New Jersey we have a work going on similar to that described by Mr. Lane. At the present time the creameries in New Jersey are under the supervision of the State Board of Health and licenses are issued by the board. We have found that the conditions in what are known as milk depots are often very serious. In several instances the managers of milk depots have been notified that they must come up to the requirements of the laws, and the

result has been in a few instances that the owner has decided to retire from business. We expect good results to follow the enforcement of this law. As yet no system of scoring dairies, as described by Dr. Lane, has been introduced.

The Chairman: Perhaps Dr. Hunt will state briefly what the requirements of the law in New Jersey are?

Dr. Hunt: An effort has been made for several years to get a satisfactory law in New Jersey for the control of creameries and dairies. The last legislature passed a creamery act which we consider very efficient. Under the provisions of this law creameries are required to come up to a certain standard, and the power is given to the State Board of Health to refuse to grant licenses to creameries which are not kept in a sanitary condition. An inspection of all the creameries in the State is now going on. The first section of the act referred to requires that creameries shall have cement floors, that a creamery building shall not be occupied as a dwelling, and that the milk shall be so handled that it shall be kept in a cleanly condition. The number of creameries in New Jersey, including wholesale depots in cities, is 225. These are being inspected and when a favorable report is received upon any one of the creameries a license is issued. In case a license is issued to any creamery, and a reinspection shows that the premises are not in a satisfactory condition the license may be withdrawn, and a fine of two hundred dollars imposed.

The Chairman: Does the law also regulate stores and shops from which the milk is sold?

Dr. Hunt: The law originally was only intended to regulate creameries, but the interpretation which has been placed upon it by legal counsel is that the wholesale shops in cities are also included. Of course, no milk is shipped from any of the wholesale shops in cities in New Jersey to New York. Nearly all of the milk which is forwarded to New York is from the creameries. I might say in this connection that an arrangement has been made with the health

authorities in Philadelphia by which information in relation to the condition of dairies in New Jersey, from which milk is shipped to Philadelphia, is forwarded to the chief of the bureau of health, and under his direction the milk from these dairies is excluded from that city. If upon reinspection of the premises it is found that the owner has made the necessary improvements in the management of the dairy, and in its sanitary condition, this information is forwarded to the bureau of health, and the prohibition against the admission of the milk into Philadelphia is removed. This arrangement has been going on for a considerable time, and the results have been very satisfactory.

Dr. Bartley: It seems to me that these two first questions in the program ought to be answered a little more definitely than they have been answered yet, and in a few words I should say this, that milk should not be allowed to be sold in an ordinary grocery store. That is the first one. It should not be sold in connection with other promiscuous merchandise. I believe the milk shop should be a special establishment where milk is the main thing. The general grocery business should not be allowed to go with the milk store. In regard to a law to discourage other than model shops, that will be answered in that statement. I think if we should boil this whole thing down to just that, we would have something definite, because the average grocery store is certainly productive of a great deal of contamination, flies, cockroaches, dirt of all sorts get in the milk, as I have noticed hundreds of times in inspecting it. It is not a fit place and nobody should be allowed to sell milk without a properly constructed ice box or refrigerator.

Mr. Allen: You might be interested in a suggestion of Dr. Biggs. In speaking to me outside he regretted that he could not have said himself that he thought there was no reason why Dr. Lane's scheme should not be applied at once to the dairies as well as the milk shops, and I hope this evening we can return to the subject and this question of raising the standard of the milk shop and dairy by just such a score card scheme as that suggested by Dr. Lane.

Mr. Lane: I would say that we have, after making many changes, settled on this form of a score card which we believe is practical because we find it works. We have used it in scoring five or six hundred dairies, and it has given most excellent results.

Dr. Freeman: I would like to suggest that these score cards are in use in other places. Dr. Park has used one for the County Medical Society dairies, and Professor Pearson has used one he has prepared in rating New York State dairies. They are not applied to shops, but to farms.

The following **resolutions** were unanimously adopted:

Resolved, That it is the sense of this conference,

1. That the sale of skim milk should be permitted, but not for consumption by infants, and not in retail stores where whole milk is sold.

2. That pasteurization should not be made compulsory; that commercial pasteurization has some value, but not the same as true pasteurization.

3. That infants milk depots should use both raw milk and pasteurized milk, but that all milk used shall be clean; that it is questionable whether municipal depots are desirable; that much educational work is possible in connection with milk depots. It should be directed to the instruction of mothers and other persons having care of infants in the proper method of feeding infants and the importance of cleanliness in their care and feeding.

EVENING SESSION—8 P. M.

The Chairman: Gentlemen, we come now to the subject which was under discussion when we adjourned, namely, Model Milk Shops. We have discussed several of the questions under that head, and come now to the question of the sterilization of bottles.

Health Commissioner Greene, of Buffalo: I believe the time is coming when we will have to discard milk bottles and get something that will perhaps do better. I only speak from experience locally, and that is that the house-

wife sends the children to the grocery with the milk bottle to get molasses and vinegar and kerosene oil in it, and that milk bottle is given to the milk man when he comes in exchange. I have had milk bottles used to send urine to my office for examination and a physician in the city of Buffalo who recently died told a lady from whom it was necessary to get some fecal matter to use a milk bottle for it, and I might say also that in going to make a visit someone stole it. Something must be done whereby the use of milk bottles for such purposes can be stopped.

Mr. Allen: I wish Dr. Lane would tell us what his department has been doing for Cleveland; it might be a help to us.

Mr. Lane: In regard to Cleveland, that work was in connection with dairy farms, and I understand that that subject will come up with the next topic.

The Chairman: No one has yet touched on the subject of what provision can be demanded for proper refrigeration, for receiving milk before business hours when delivered from stations.

A Member: Wagons delivering in the early morning at stores not yet open leave cans outside, unprotected from heat in summer, and from warm rains. The milk grows warm and bacteria flourish. It would not be a hardship to require that inexpensive folding boxes be provided to which drivers could have keys. In this way with very little ice a serious danger would be avoided.

The Chairman: I would like to ask Dr. Bensel how completely the regulations of the Health Department as to temperature are carried out?

Dr. Bensel: It has been found to be practicable to see that the milk is kept at a proper temperature. Constant inspections are being made and temperatures are being taken to see whether this regulation is lived up to. Milk found below the required temperature is condemned and dumped down the sewer, and the consequence is that it is lived up to

fairly well. Of course, during the winter months, there is no trouble. In the summer the temperature of milk may be higher and we have to destroy a considerable quantity.

In the model milk shop there is no reason why a box should not be provided with ice where the cans can be kept covered and away from the dust of the street and the shop.

The Chairman: What would be your answer as to what provision can be demanded for proper refrigeration?

Dr. Bensel: Proper refrigeration is demanded and is very properly kept up.

The Chairman: What is the temperature at which milk must be kept?

Dr. Bensel: It must be less than 50 degrees.

Mr. Opdycke: How near the purchaser does your inspection come? How near the time when milk is sold do your people examine it?

Dr. Bensel: The examinations are usually made very early in the morning, because in many stores the milk is sold very soon after it is received. That is very generally the case for small stores. Examinations may be made wherever we find milk, sometimes in a store, sometimes in a wagon on the street and sometimes in a railroad yard.

Mr. Opdycke: Are inspections made in the afternoon when this milk is being dealt out by the dipperful for families?

Dr. Bensel: There is scarcely an hour by day or night when these inspections have not been made.

The Chairman: Now, what provision should be made for the sterilization of bottles and utensils? That has been touched upon more or less in the discussion, but I don't know there has been any general expression of opinion in regard to that, and it is a pretty important branch of the subject.

Dr. Holt: It seems to be clear that milk bottles are

often the means of spreading disease, and therefore no dairy or creamery ought to be permitted to sell milk in bottles or to distribute it in bottles which has not the proper facilities for cleansing and sterilizing bottles.

I think some of us may remember what the conditions were in Philadelphia a few years ago when things were so bad that an ordinance was asked for to prohibit milk being sold in bottles in the city of Philadelphia. It was found that men would go into a house and get empty milk bottles, fill them from their cans on the wagon and deliver them to the next customer.

While all agree, I think, that the transportation and sale in bottles is the best method, we must see to it that the bottles are clean; proper cleansing of bottles is impossible unless the dairies are provided with some means of sterilizing the bottles. That would seem to be a regulation not difficult to enforce, *i. e.*, that no milk should be sold in bottles from any creamery that has not the proper sterilizing apparatus for its bottles.

In that way the carrying of typhoid, scarlet fever and diphtheria by this means could be prevented. We all know how easily this may occur from milk bottles which have stood in sick rooms.

Commissioner Greene: When the dealer sends the cans back to the dairy in a very filthy condition, the question arises who should clean those cans and should the city dealer who handles those cans be permitted to put refuse in those cans and yet hold the dealer in the country responsible? Or should the man in the country who empties the can be obliged to clean them and send them back?

Dr. Goler: I think most of us agree to the importance of sterilization. The only disagreement might be as to the cost of a sterilizer. I think one can be made out of a plank and galvanized iron which will stand the pressure of eight or nine pounds, and can be made for three or four dollars at any rate.

Dr. Park: I don't think we want to demand absolute sterilization. What we want to be sure of is that a bottle is clean and all disease germs are killed. I don't believe it is

necessary to have steam at more than the ordinary pressure.

Dr. Goler: Our sterilizer and similar sterilizers have been used for years.

Dr. Coit: It seems to me this is a very important question that Dr. Holt has answered, first in that there should be some means by which all bottles used for milk containers should be sterilized.

Now, I am willing to take the lower grade of sterilizer for a general supply of milk, and not require an expensive apparatus that is necessary to cause a temperature pressure of several pounds. I think that five pounds pressure would cause 225 F. For the milk that comes as "certified milk" and inspected milk we should have the highest kind of requirements and results, but with the general supply it never can be accomplished. Of course, it is impossible for us to expect these dairymen to change to this apparatus. I should think it would be fully sufficient if the Holland house-wife's method was employed in the dairy to keep dirt out. I should say that a sufficient sterilization would be a man who knows how to get things clean on the Holland house-wife's method, by rinsing the bottles with something that would disintegrate the fat by washing it with soap or soap powder to get the milk out. If any remains they rinse first in cold, clean water, another clean water and another clean water. They should then be rinsed in water as hot as the hands will bear. That is a sterilizer; that man is a sterilizer and it is all we hope for from a majority of the milk producers.

The ideal sterilizer would be one that would accommodate four or five hundred bottles, railroaded in on a truck and sealed hermetically so that the pressure would be attained and the temperature acquired. It is necessary to raise the temperature to two or three hundred degrees F. for several minutes, and it seems to me the most important thing is to remove the disease germs. The few that remain won't do very much harm, but it is necessary that some requirement should be established by which these bottles may be sterilized, especially those coming back

from sources of contamination and contagion and in any supply of any magnitude there are bottles every day coming from scarlet fever or diphtheria or typhoid or tuberculosis. These bottles ought to go through a special method of cleanliness or vigilance that would make them hygienically germ free.

The Chairman: What provision shall be made for sterilization of utensils and bottles under the head of the milk shop?

Dr. Bartley: It seems to me that some protection ought to be thrown around the milk shop if they are to be allowed to fill milk in those shops into bottles. If these shops receive their milk in cans and then fill it into bottles, then they ought to provide a sterilizer. If they receive their milk in bottles then no sterilizer is needed. They can simply wash the bottles out as the housewife usually does, as clean as possible, and send them back to the creamery, the sterilizing to be done there. It seems to me that answers that question.

The Chairman: What provision ought to be made regarding the dress and care of the person of the attendants in the model milk shops?

Dr. Bense! The dress of an attendant at a model milk shop should be of washable material and should be clean.

Dr. Armstrong: In regard to the question of sterilizing bottles, instead of the expensive apparatus, a plan that would be applicable in the milk shop would be that which the surgeon uses in sterilizing his instruments, by boiling. This could be done in a wash boiler, which is not an expensive apparatus.

Professor Pearson: It seems to me that the man who runs the shop ought not to be obliged to maintain a large plant to sterilize the cans. The casein should be removed at once by rinsing, and the cans may then be returned to the larger establishment where the cleaning should be as thorough as required.

The following **resolutions** were thereupon adopted:

That nothing should be sold in connection with milk except other dairy products and sealed-package goods. Where milk is sold in grocery stores separate bootlis should be provided in which the milk is kept apart from other articles dealt in. It is not practicable to prohibit the use of cans; also the milk should be required to be kept at a temperature below 50 degrees Fahrenheit; all bottles should be cleansed and exposed to a boiling temperature for a sufficient length of time to destroy all pathogenic germs, and that the natural place would be at the creamery where they are refilled.

That in model shops provision should be made for sterilizing utensils at least to the degree of boiling them daily. That the attendants should wear washable white suits both for cleanliness and for the moral effect upon those purchasing milk.

The Chairman: We will pass now to **Inspection.** the subject of INSPECTION. Mr. Lane began this afternoon and I think he can now continue with considerable profit to us.

Mr. Lane: Mr. Chairman, while inspection is important in securing a clean milk supply for any city, it is not all. Combined with inspection it is certainly necessary to have a campaign of education, not only among producers but consumers as well.

New York City is not very different from a great many other cities. You have a good system of inspection but the trouble has been you have not had the money and you have not had the number of inspectors to carry the work far enough. What are fourteen inspectors among something like 30,000 dairies? As I understand it, your work in the past has largely been the inspection of creameries, and now it seems to me you have just begun the most important part of the work, by going back to the dairy farmer and getting in close touch with him, not only by enforcement of police regulations but by moral suasion and education. It is clearly evident that only slow progress can be made

in improving dairies with so few inspectors. If a sufficient number of inspectors could be placed in the field to report conditions and close up dirty dairies until they were put in proper condition, it would go a long way toward securing a clean milk supply. One small city in your State that has had sufficient inspection has accomplished this, and no dairy that has not been approved by the Board of Health can sell milk within its limits.

I have looked over your method of inspection, which I think is as good as that in any other city that has come to my notice. It provides for a report on the various conditions found in the dairy which is sent to the Board of Health office. I think the system of inspection, however, should go further than this and give the dairies a definite rating on some basis so that they can be classified and their condition readily compared from time to time when new inspections are made. With the present system it is not an easy matter to do this.

Now, the Department of Agriculture in looking about for a way to assist the Boards of Health has decided that the very best way to go at it is through the score card as a basis, and as I said before, this score-card idea is not a new thing. My friend, Professor Pearson, was one of the pioneers in introducing the score card a few years ago, and since that time several others have appeared. Some, I believe, give too many points to the cow; this has been particularly true of veterinarians. Naturally the individuality of the man preparing the score card would be shown in the arrangement of the points. After the experience of scoring over one thousand dairies we have prepared a card which we think is practical and it has been adopted by the Board of Health in several cities. In Washington we are cooperating with the Board of Health and have scored over three hundred dairies.

I don't know as I need to go into the details of this score card. It is divided into five sections. The cows are given 20 points; the stables 25; the milk-house 20; the milkers and milking 15, and the handling of the milk 20, making a total of 100.

DIRECTIONS FOR SCORING.

COWS.

	Perfect score.
CONDITION AND HEALTHFULNESS.—Deduct 2 points if in poor flesh; and 8 points if not tuberculin-tested	10
CLEANLINESS.—Clean, 6; good, 4; fair, 2; bad, 0	6
WATER SUPPLY.—If clean and unpolluted, 5; fair, 3; otherwise, 0	5

STABLES.

CONSTRUCTION.—For cement floor (a)* in good condition allow 2 points; fair, 1; poor, 0; wood floor (b) or other material in good condition, 1; fair, $\frac{1}{2}$; poor, 0; good tie (c), 1; good manger (d), 1; box stall (e), 1	5
CLEANLINESS.—If thoroly clean, including floor (a), windows (b), and ceilings (c), 5; good, 4; medium, 3; fair, 2; poor, 1; bad, 0	6
LIGHT.—Four square feet of glass per cow, 5; 1 point off for each 20 per cent less than 4 square feet per cow	5
VENTILATION.—Good ventilating system, 4; fair, 3; poor, 2; bad, 0	4
CUBIC SPACE PER COW.—If 500 cubic feet or over per cow, 3; less than 500 and over 400, 2; less than 400 and over 300, 1; less than 300, 0	3
REMOVAL OF MANURE.—Hauled to field daily, 2; removed at least 30 feet from stable, 1; otherwise, 0	2
STABLE YARD.—In good condition (a), $\frac{1}{2}$; well drained (b), $\frac{1}{2}$; otherwise, 0	1

MILK HOUSE.

CONSTRUCTION.—Tight, sound floor, and not connected with any other building (a), well lighted (b), well ventilated (c), 2; (d) if connected with another building under good conditions, 1; otherwise, 0; (e) if no milk house, 0	2
EQUIPMENT.—Hot water for cleaning utensils (a), 1; cooler (b), 1; proper pails (c) and strainers (d) used for no other purposes, 1	3
CLEANLINESS.—Interior clean, 5; good condition, 4; medium, 3; fair, 2; poor, 1; bad, 0	5
CARE AND CLEANLINESS OF UTENSILS.—Clean (a), 3; kept in milk house or suitable outside rack (b), 2; otherwise, 0	5
WATER SUPPLY.—If pure and clean running water, 5; pure and clean still water, 3; otherwise, 0	5

MILKING.

ATTENDANTS.—Healthy	6
CLEANLINESS OF MILKING.—Clean milking suits, milking with clean dry hands, and attention to cleanliness of udder and teats while milking, 10; no special suits, but otherwise clean (a), 7; deduct 4 points for uncleanly teats (b) and udder (c) and 3 points for uncleanly hands (d)	10

HANDLING THE MILK.

PROMPT AND EFFICIENT COOLING.—If prompt (a), 6; efficient (b), if 50° F. or under, 5; over 50° and not over 55°, 4; over 55° and not over 60°, 3; over 60°, 0; if neither prompt nor efficient, 0	10
STORING AT LOW TEMPERATURE.—If 50° F. or under, 5; over 50° and not over 55°, 4; over 55° and not over 60°, 3; over 60°, 0	6
PROTECTION DURING TRANSPORTATION TO MARKET.—If thoroly protected (load), 5; good protection, 4; partly protected, 2; otherwise, 0	5

100

SCORE.

If total score is 90 or above and each division 85% perfect or over, the dairy is **EXCELLENT** (entitled to registry).

If total score is 85 or above and each division 75% perfect or over, the dairy is **GOOD**.

If total score is 70 or above and each division 65% perfect or over, the dairy is **FAIR**.

If total score is below 70 and any division is below 65% perfect, the dairy is **POOR**.

* The letters a, b, c, etc., should be entered on score card to show condition of dairy, and when so entered should always indicate a deficiency.

D. D. 113-9-27-08-6,000.

**UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
DAIRY DIVISION.**

SANITARY INSPECTION OF DAIRIES.

Owner or lessee of farm :

Town : State :

Total No. of cows : No. milking : Quarts of milk produced daily :

Is product sold at wholesale or retail ?

If shipped to dealer give name and address :

Permit No. Date of inspection :, 190

	SCORE.		REMARKS.
	PERFECT.	ALLOWED.	
COWS.			
Condition (2)	10		
Health (8)			
Cleanliness	5		
Water supply	5-20		
STABLES.			
Construction	5		
Cleanliness	5		
Light	5		
Ventilation (4)	7		
Cubic space per cow (3)			
Removal of manure (2)	3-25		
Stable yard (1)			
MILK HOUSE.			
Construction (2)	5		
Equipment (3)			
Cleanliness	5		
Care and cleanliness of utensils	5		
Water supply (Temp. ° F.)	5-20		
MILKERS AND MILKING.			
Health of attendants	5		
Cleanliness of milking	10-15		
HANDLING THE MILK.			
Prompt and efficient cooling	10		
(Temperature of milk: ° F.)			
Storing at a low temperature	5		
Protection during transportation	5-20		
Total score	100		

Sanitary conditions are—Excellent: Good: Fair: Poor:

Suggestions by Inspector:

Signed: Inspector.

We have carefully worked out a system of directions for scoring so that different inspectors working on the same dairy ought to be able to score within five points of each other, and very often they get the same. I have copies of this card with me, and will be glad to explain it more fully to anyone after the meeting.

In the 200 dairies scored around Washington, the cows averaged 11 points where 20 is perfection, or 55 per cent. of what they ought to; the stables scored 8 points, against 25, or only 35 per cent. of what they ought to score. You see that is where they fall down. The cleanliness, sanitary condition, construction of the floors and mangers were generally in bad condition. The milk-houses only scored 12, on a basis of 20 for perfect, or 23 per cent. of what they should score; the milking scored 68 per cent. perfect, and the handling 37 per cent. perfect. Here again is where the condition of the dairies is often very bad. The dairymen, as a rule, do not properly handle the milk, cool and store it, and that is the reason why we find so many bacteria. Out of the 200 dairies the average score was but 55.5 on a basis of 100, so you see there is a good deal of missionary work to do. Conditions may be better in your State of New York. In another city, where we are cooperating with the Board of Health, 700 dairies have been scored, the average score is about 45 per cent. I might give some other data, but I think this is enough to show the general plan of the work.

One of the great advantages of the score card is it shows at a glance just how every dairy stands. It gives them a definite rating. With the inspection in most of the cities, the inspector reports the condition of the dairies by answering fifteen or twenty questions, but it is very difficult to tell at a glance the standing of the dairy, whereas with the score card the condition of all parts of the dairy are readily seen. Another advantage is the assistance it gives the farmer to improve. You know there are lots of farmers who would be glad to improve their dairies if they knew exactly how, but they don't know how.

The following letters are from dairymen who have had their dairies scored:

"Dear Sir—It gave me great pleasure to meet your dairy inspector. He called at our farm and thoroughly scored our dairy, giving us 75 per cent. and showing, or pointing out to us, where we might score 100 per cent. with a few improvements, the fact we appreciated very much. I am just writing these few lines to show our appreciation of the valuable work that you are accomplishing for the benefit of the public health as well as the welfare of the dairymen at large. The visit of the inspector done us a world of good, pointing out our defects in the dairy.

"Wishing your department the hearty cooperation of all the dairymen, I am,

Yours sincerely,

"(Signed) _____,

"Manager for _____."

"My Dear Sir—I want to thank you personally for your visit to our farm this week. It has inspired me with renewed life and vigor. I shall not wait until the new year to make new resolves and promises but begin right now. I know I shall never reach my own ideals even, but I have made up my mind to try. No matter what the motive is in the Department of Agriculture in sending out such inspectors, it cannot fail in my judgment to do immense good.

"I want you to come around again next year, and if I am not entitled to be marked up at least 20 points, I will promise you to go out of the business, as I ought to.

"Very truly yours,

"(Signed) _____."

These are samples of the letters we are receiving from dairymen and show that they appreciate the work.

Now, one of the questions I notice is with reference to how many inspectors it would take to clean up the milk supply of New York City. On the basis of the work we have already done it seems to me that one inspector should cover from 400 to 500 dairies in the field. This would give him an average of eight to ten dairies daily, when working twenty-five days in the month. Of course, it is understood

that the inspector has no other duties. On this basis it would require sixty to 75 inspectors to cover the 30,000 dairies and give them an inspection every two months. Perhaps conditions here are a little different than in Washington.

We are going a little farther in this matter of scoring dairies, and we have established a registry for every dairy that scores 90 points or over wherever found. This national registration will be an incentive to dairymen to bring their dairies up to a high standard. Of course, it will be more or less of an advertisement to the dairymen who are doing well and trying to do what is right, but they ought to be advertised. After we have covered the 900 dairies around Washington we expect to publish in the local papers the names of all dairies that score over 70 points. A dairy that scores over 70 we consider fair. Publishing the names gives the consumer an opportunity to know just where good milk can be secured and it will encourage the producer who is trying to produce clean milk to keep on with the good work.

I have mentioned the work we are doing outside of Washington. In the city referred to where over 700 dairies have been scored they have placed the standard score at 30 to start with. While this seems ridiculously low, they find a great many dairies to cut off, even at 30, and they will raise that score to 50 or 60, or until they secure good milk. It wouldn't do to insist on 70 at first, but the Health Officer has written me two or three times that the method was working out all right, and it is only a question of time when they will have clean milk for the entire city.

The Department of Agriculture will be glad to co-operate with any city in this work and give any assistance possible.

Dr. Bensel: Under the subject of inspection there are four catagorical questions that are asked, but before answering them as I think they should be answered I am going to say a little bit about what New York City has done for milk; what it is going to do at once, and what it proposes to do in the future.

I cannot talk very long, but I can show some of the results of our inspection. Milk from the time it is produced until it actually enters the mouth of the consumer passes through a chain of about seven links: the dairy; transportation from the dairy to the creamery; the creamery; transportation from the creamery to the city, *i. e.*, the car transportation; transportation from the railroad platform to the retail store; the household where the milk is kept for consumption.

As to transportation from the dairy to the creamery, and from the platform of the railroad to the retail store in the wholesaler's wagon, and the care of milk in the household, these have been taken up and considered somewhat, but as yet have not been carefully worked out. Those three have been held to be less important primarily than the other four, and, of course, they have had to wait their turn in the work of the Department.

In regard to the dairy. Prior to June, 1906, practically no work had been done by the City of New York in the dairies at all. Since June, 1906, 4,300 inspections of dairies have been made. Reports have been made covering recommendations and saying what should be done. Last week 536 inspections were made. That 536 shows very fairly well what 14 men can do. There was some statement as to 14 men not being able to do very much, but they can do 536, and the 14 men alone could probably cover the whole milk supply, so far as the dairy is concerned, in less than a year. I don't mean that 14 are enough. They are not; but they do a large amount of work.

I want to show here some conditions of the dairies: Those pictures (passing pictures about) show definitely the conditions of filth which are found in some of the dairies. It shows how very necessary it is to begin work where the milk is produced and how absolutely absurd it is to suppose that pasteurization will be a cure for such conditions as are represented in those pictures. There is no question but what milk produced from such stables as that (exhibiting picture) is in a condition similar to that of a can of milk in which a handful of manure is placed. That cannot be cured by pasteurization, but requires attention at the source.

Now, in the inspection of creameries, up to the present time, since the creameries were first taken up, we have made 2,100 inspections. That means that every creamery has been gone over two or three times at least. The creameries have been placed on a map in this way (exhibiting large map of New York State). Each one of these pins represents a situation of a creamery. The color of the pin represents the condition of the creamery now and when first found. On close examination a few pins will be found white in color. Those mean found at first in good condition and needed no change. They are very, very few, and hardly discernible at the first glance. The green pins are pins showing dairies found in bad condition, but have been put in good condition, and the red pins are the creameries which were in bad condition and, so far as our knowledge goes, at the present time are still in bad condition. In 1906 we have made 946 inspections of creameries. We have gone all over them, as you see, up to the present time. Last week 105 creameries were examined.

I have some pictures here which will show conditions before and after inspection in these creameries. The improved conditions which we have produced I think are far more interesting than the conditions originally found. (Exhibiting pictures.) It will be seen in these pictures that improper floors and drainage were present and how they were cleaned up and put in proper condition after a subsequent inspection.

In the transportation of the milk from the country to the city, a great deal must be required. Some milk comes from over 400 miles away from New York. Consequently it is on the train for a long time. Effective refrigeration on the train is absolutely essential and the cars have been provided by almost all the railroads with proper refrigeration, double walls, proper receptacles for ice, and the milk has been kept in a very fair condition, keeping it at a temperature always of 50 degrees. The interior of a car is shown very plainly by this picture. (Exhibits picture.) The receptacles for the ice, the double-walled car and ice on each of the cans work very well in keeping the temperature down in transportation.

Concerning the fifth link in the chain of the milk, we come to the transportation from the railroad platform to the retail store in the wholesaler's wagon. This is a subject which the Department has taken up, and it seems wise to require that those wagons shall be closed wagons with some provisions made for icing and keeping down the temperature during that time. I think that will take care of that link.

In regard to the retail store, the store where the milk is sold, we have many regulations which tend to protect the milk. We require that milk shall be kept in boxes, refrigerated. We require that the box shall be covered. I don't mean to say for a moment that the boxes are covered always or that the milk is always refrigerated. We require that no living apartment shall be in connection with the place where the milk is sold and that the milk shall be handled and kept in a cleanly way.

During the present year, up to the present time, we already have made inspections of 110,000 in number of milk stores. That means, of course, that milk stores have been covered at least each month more than once up to the present time.

Now, in regard to the questions asked here. In the first place, "Is it practicable by inspection alone to secure a clean milk supply?" I would say, yes, it is absolutely possible, perhaps not now, but after a time. If we keep our milk at a temperature of 50 degrees from the time when it is produced through the various transportations to the time it reaches the consumer, and educate the consumer to keep that milk cold while in his possession, I think there will be no trouble in having clean milk by inspection alone. That doesn't mean in a city of this size that we shall have every drop of milk in a cleanly condition.

In the second place, "Will it protect against more dangerous forms of infection?" If followed up in that way, it must.

As to the specific point of how many inspectors New York City needs within the city. Within the city we have at present, I think, a sufficient number of inspectors to look

after the work in the city. So far as the country is concerned, we have nowhere near enough inspectors. We have 14 at present, and the estimate which Dr. Lane made is very close to our own. We certainly should not expect to do very good work with less than 80 inspectors outside of the city. I think Dr. Lane's number is less than mine, because he didn't think of the number of miles our inspectors would have to travel.

Now, there have been a number of other questions asked. How far is it possible to estimate the success of a campaign for clean milk by systematic bacterial inspection? It seems to me that if systematic bacterial tests are made of milk that has not been subject to a pasteurizing process, that it will give us absolute proof as to whether there is a success in the campaign or not. Of course, we can't take milk that has been filthy, pasteurize it and count the bacteria, and say that a low count proves that the milk was all right. In order to obtain a fair basis for comparing one year with another, how many samples in proportion to the dairy milk supply of a city is it necessary to examine, and what proportion should be taken in the summer? I think that most of the work of that kind should be done in the summer; that all we need is a few samples in the winter just to see whether the winter temperatures are keeping down the bacterial count. I think it is immaterial to say what proportion we should examine; simply a few samples a week taken at different places at different times would give us a very good line upon how the milk is running.

To what extent is average cleanliness a fair criterion? Is it usually more important to see that there are no instances of a very high bacteria count or that the general average is good? I don't think in a big city like this that we can ever hope to find no single instance of high bacterial count. If our general average is good it is certainly all that we can expect.

Commissioner Hebbard: I would like to ask Dr. Bensel to what extent the milk sold in the shops is subjected to bacteriological tests?

Dr. Bensel: We make tests all through the summer in

the shops, the railroad platforms, at the farms and at various other places.

Commissioner Hebbard: I must confess that I have a little curiosity to know what the results are with relation to the milk taken from the shops in the poorer districts of the city after examination. What would you say the average count was?

Dr. Bense: In the poorer districts it is very high.

Commissioner Hebbard: What would it be?

Dr. Bense: Over a million very frequently; several million very frequently. You must remember that these inspections in the country districts were practically begun in June.

Dr. Williams: I would like to know on what bacteriological count milk sold in the shops and at the depot is condemned?

Dr. Bense: On bacterial count milk is not condemned. By the time the count is finished the milk is consumed.

Dr. Williams: If a man is selling milk at a high count is he fined?

Dr. Bense: No; but his source is followed up and the conditions at his creamery or the farm and the method of handling the milk are immediately corrected.

Dr. Williams: Then there is no bacteriological count standard as yet?

Dr. Bense: Not as yet.

A Voice: 500,000 is what they use in Boston to make prosecutions on.

Mr. Allen: I would like to ask Dr. Bense if, by saying that 14 inspectors for the city are enough, he has in mind the winter need for inspection or the summer need for inspection? If he thinks that 16 are a large enough number for our summer work?

Dr. Bense: Transportation in the city is so easy that we can throw our whole 14 inspectors in one day or one

night in one place, and the next day in another place, and we can use them to such advantage that they are all we require now. Our crying need is the increase of country inspectors.

Professor Pearson: I have always felt that winter inspection was exceedingly important. I think the bacteriological examination of milk in winter shows that there is a larger proportion of objectionable germs in milk at that season than in the summer, for the reason that the cows are confined in barnyards and stables. In the summer season contamination is shown by the souring of the milk; this is evidence of contamination. In winter milk may be worse contaminated and show nothing either by taste or smell. A great aid to inspection in summer is the simple acid test. In 30 seconds an official can inspect a can of milk and ascertain the amount of acid present and that will indicate to him whether the milk has been kept at a sufficiently low temperature since it was drawn from the cow.

What I think should be emphasized is the need of inspectors who are well trained and familiar with country conditions. Sometimes, I know it to be a fact in connection with this city's supply as well as others, inspectors not familiar with country conditions have found great fault with unimportant details and ignored or treated in some ridiculous way important features, both good and bad. I am not criticizing New York conditions alone. I want to congratulate Dr. Bensen and his assistant on the good work they are doing. Some time ago I visited a milk station and noticed as the farmers drove up that the manager spoke a few words in a low tone to each. I asked him what he was telling these people. He said, "We heard the New York inspectors are down the line a little way and I was telling them they must brush up a little before the inspectors got here." (Laughter.) That is the moral effect of inspection . . . upon that district. Even if the inspectors never visited that town, the fact that they came within ten miles of it had a good effect.

I think some benefit of inspection might be extended to every shipper of milk to this city in this way: Send out a blank form asking for specific information about the dairy.

"How many cows have you? Is your barn tightly sealed? Have you a cement floor?" etc. Require them to fill out these forms. The fact that the farmer has filled out the blank can't help having a good effect, as it shows that he has thought of the essentials.

In reply by mail to questions under "Inspection," seventeen out of twenty-three expressed the opinion that it is possible to secure a clean milk supply by inspection, provided the inspection is conducted in the right manner, with qualifications, such as "with some increase of price to the farmer," "with aid of legislative penalties," "with proper transportation." Only four replied in the negative, and one of these added "though it aids greatly."

The average frequency of inspection advocated was once every two months, with several suggestions that even closer visits might be needed in some cases at first.

As to its protecting against the more dangerous forms of infection there was only one unqualified "No." Six gave an unqualified "Yes," the remainder varying qualified affirmatives, which may be summed up as saying that it is the only way to keep out of milk those deadly germs which the most thorough *sterilization* alone can destroy.

The Chairman: We will reverse the order of the next two subjects and take up education first. "Should State system of lectures before agricultural institutes be extended? Should the Maryland plan of traveling school be adopted as a means of reaching the producer? What can be done to assist the Teachers' College in its plan for a milk exhibit?"

Dr. Fulton: In this very admirable summary here, the program, I find the greatest satisfaction in one little point that jars me slightly, and that is the question under this head, "Should the Maryland plan of traveling school be adopted as a means of reaching the producer?" I don't mind having that very excellent plan attributed to the

State from which I come, but it is historically incorrect. What little I learned about the dairy inspector I learned from a New Yorker. It is a means of educating the farmer in many parts of the country and especially here in the North. We have had specialists in various subjects, especially in agriculture, but you don't need to come to Maryland to learn about it: They are frequent in many States.

Now, the points about the Dairy Special last spring are that the State Board of Health was planning a good series of popular lectures on various subjects connected with milk supply and intended at the end to give a milk exhibit which came off in May of last year. The Director of the Farmers' Institute at the same time had had his corn special and tobacco special and thought it a good plan to run a Dairy Special.

The Dairy Special in Maryland did not cost anything as far as transportation was concerned. The railroads carrying milk were perfectly willing to put two cars and an engine and crew at the disposal of this group of men who ran the Dairy Special. The advertising cost some money. It was advertised in advance by posters which were pretty large, at all the stations. A careful itinerary is planned. The idea is to make as many stops as can be conveniently made in a day's travel so that the stations on the road are checked off carefully so as to permit moving from one station to another in about eight or nine or fifteen minutes, and the farmers all are advised just at what hour the train will arrive. The county newspapers announce this in advance.

The train carries four people; ordinarily two are enough to speak. The idea is to spend just forty minutes at a station. One of the cars is used as an auditorium, and five minutes are allowed for the farmers to come in and fifteen minutes for each of the speakers and five minutes to get started in. I greatly admired Mr. Jared Van Wagenen's skill in speaking within five seconds of his allotted time.

Now, great improvements are possible with this idea.

In addition to giving the farmers the reasons why we were out on the road and the special points they needed, we encouraged them to come down to Baltimore and see our milk show and go to the lectures there which were being held once a week.

I think, however, that the dairy special could be elaborated and improved and made very profitable if it were combined with some kind of an objective exhibition of dairy methods.

May I say just another word about the assistance that this conference can give to the Teachers College in this matter of a milk exhibit? I will not pretend to advise this conference except to commend this enterprise very strongly. There is one thing in which this conference can help the Teachers College, and that is a body of enthusiastic men who are sufficiently trained to know on this subject that they don't know very much about it. If they have gotten so far as that and will give the Teachers College the assistance necessary to enable them to give a great deal better exhibit than we gave down in Baltimore last May, I think it will help you to answer a great many questions that are asked in this excellent summary.

The educational idea cannot be very well overworked in all these questions of social amelioration and sanitary improvement. Just by getting a small group of enthusiastic people, whose knowledge is infectious, and spread that abroad, and you can do the last thing necessary for all of this sanitary work and sociological work. That, I think, is the whole matter. I very heartily commend the ambition of the Teachers College to your assistance.

Assistant Commissioner Flanders: Jared Van Wageningen, to whom the gentleman from Maryland has referred, is one of the Institute workers in the State of New York. These institutes are held under the auspices of the Department of Agriculture. During the past year there were 270 such institutes held in the State with 1,096 different sessions. They are held in different places in the State upon request. Some of them are for one day, others for two days, while others are for three days, depending upon the needs of the locality.

The Director of the Farmers' Institute informs me that he had calls for three or four times as many meetings as he was able to hold with the money at his command. Twenty thousand dollars was appropriated for this purpose by the Legislature. The first appropriation ever made for this work was \$5,000, then \$10,000 for a number of years, then \$15,000 and finally \$20,000, which amount has been appropriated annually for a number of years. With the great demand for these institutes it has been thought that more money should be appropriated for this work.

The lectures delivered at these institutes are supposed to cover all the educational side of agriculture, and are for that reason schools for those who are employed upon the soil and unable to attend regular agricultural schools.

You are discussing the milk question at this meeting, and I desire to impress you with the idea that a great work is being done at the institutes in disseminating knowledge relative to the production; care and transportation of milk. Somebody has said somewhere that if you would have the nation have a high standard you should commence by reforming the individual; that you cannot make laws that will govern the different classes of people in such a way as to make them aggressively loyal. Applying this principle to the question at issue, I would suggest that it would be a pretty good thing to do to make the work thorough in educating the fellow who produces the milk, so that he will know how to do that work in the best possible way. This can be done to a large extent by increasing the capacity of the institute work. At these meetings all the questions are discussed by men who are experts, or at least as near experts as we can procure.

Dr. Chapin: I notice one question, "Can nothing be done to increase the supply and cheapen the price of ice?" I think that is a very important subject. It is impossible to care for milk unless we can have plenty of ice available for the farm.

In the preliminary work of the Milk Commission here, we found many small farms cooling their milk in springs, and we had the temperature of springs taken through New

York State and we found the temperature very much higher than we supposed and not low enough to properly cool the milk. No matter how careful the farmer was there would be a high bacterial count.

A Member: I have often been impressed with the possibilities of increasing the storage of ice by the individual farmers. The question of producing a low temperature in the milk rapidly or cooling the milk down as Dr. Chapin has remarked, cannot be done with ordinary spring water. Now, every farm has a little pond on the place, and we should include in our recommendations the resolution as a result of this discussion, advice to the farmers to collect their own ice and use ice in cooling their milk and impress upon them the importance of an early cooling of the milk to get it to a low temperature before they send it to the creamery.

Professor Vulte: The object of this report is really to educate the consumer of New York in the methods we would use in the trade handling of the milk. Very largely that and also as to the treatment of milk in the household after they receive it. Now, the milk may be received at the household in a perfectly sanitary condition, yet after it is received there, from improper storage and handling it becomes absolutely unfit for food. That has come to the notice of almost everybody who has had anything to do with the household. Even in the best household, milk is not kept in an absolute sanitary condition.

Look at the way milk is kept in the ordinary household in the refrigerator? What is the ordinary refrigerator except an incubator for germs? I have looked into that matter a good deal and I can speak authoritatively on that subject.

Now, the Milk Exhibit would deal with the following subjects: first, the milk proper, which would include the cattle, dairy methods, creameries, dairy apparatus, dairy foods, etc.; transportation, and, lastly, inspection. That would include the work of the Board of Health; bacteriological tests, analyses, etc., in the household; invalid food, etc.; second, dealing with the commercial products of

milk, leaving aside entirely those that were used for strictly commercial uses and not for actual food—that is, the condensed milk, milk powders, malted and fermented milk and other special preparations.

There is no question but what this is a large undertaking. This is a great city. The only question is whether we can interest the inhabitants enough here to carry it to a successful conclusion. We ask the aid of the Association and those present in making it successful.

The Chairman: Gentlemen, there are a number of very important questions that have not been touched upon. "What can be done to teach mothers to detect unclean milk and to care properly for milk purchased? How can tenement mothers keep milk at a proper temperature?"

Professor Pearson: I think they should be instructed to look for sediment. If they pick up a bottle too quickly the sediment will disappear. And the mother should be trained to consider the cleanliness of the store where they buy their milk. That goes back to the former subject. They should understand which stores are unsanitary.

Dr. Williams: There seems to be one possibility of educating the tenement mothers in utilizing a large number of recreation piers that we have in the city. It seems to me there is a possibility of using the end of the recreation piers as centers of instruction to the mothers about how to detect the bad milk and how to care for the milk in their homes.

Dr. Ager: In regard to the tenement house question, I have found that something could be done by advising several mothers in a tenement to combine on the ice question. Sometimes they feel they cannot have ice, but several families can combine, having one small ice box or rather a substitute for an ice box and one good-sized piece of ice, and then the milk supplied to three or four families kept in that. It is a small volume of milk. I haven't meant, of course, the milk from the distributing stations for the feeding of children.

In reply to some of the questions under "Education" there came by mail a general statement that State Agricultural Institute lectures should be extended and the traveling school adopted for the education of the producer.

To teach mothers and to bring the consumer generally to a proper appreciation of the value of pure milk as a food and methods of caring for it, many suggestions were made of infants' milk depots with nurses and physicians in charge; model milk shops with a constant lesson in their evident cleanliness; free illustrated lectures in schools, churches, and through other societies; teaching in public and private schools; circulation of attractive leaflets and circulars in different languages through schools, libraries, settlements and churches.

The Chairman: The last question under this head is, "Is it desirable that a local committee be formed to co-operate with the Department of Health and County Medical Society?"

Mr. Freeman: I believe that this conference is the most important meeting in connection with our milk supply that we have ever had in New York. I feel that all the gentlemen who have taken part have felt that this is true. It seems to me that a committee should be appointed to continue this work and I move, Mr. Chairman, that such a committee be appointed by your Association; there should be a general committee and a smaller executive committee.

Motion duly seconded and carried that a committee be appointed by the New York Association for Improving the Condition of the Poor to co-operate with the Department of Health and the County Medical Society with regard to the subjects that have been discussed at this conference, there being one large committee and an executive committee.

The Chairman: We come now to the broad subject of legislation. Are there any remarks to be made upon these various questions?

Dr. Bensel: With regard to the transfer from one can to another, or from a can to a bottle on the open street, being made a misdemeanor, at present it is a misdemeanor to transfer milk from a can to a bottle or from one to another, except to the vessel of the purchaser. From the can to the vessel of the purchaser, but in no other way, so that is covered by the present law.

"Shall pollution of milk cans and bottles be made a misdemeanor?" I feel that is of very great importance. We have touched on it to some extent, but it seems to me not in the right way. There is no possible solution of that until the city provides a city ordinance which makes it a misdemeanor to have a dirty, filthy bottle in your possession. That will make anybody who has anything to do with milk bottles clean them up as soon as the milk is out of them.

The Chairman: I would like to ask Dr. Bensel if he regards, aside from that, the present sanitary code sufficient and adequate?

Dr. Bensel: Yes.

The Chairman: There is also this question to be considered: "Shall sealing cans at creameries be required?"

A Member: I think we should all agree that they should be sealed.

The Chairman: "Should a bacterial standard be established?"

Commissioner Greene: I am not a bacteriologist, but locally where I live this scheme works to perfection. The farmer who sends in a milk containing 1,500,000 bacteria is written to and told his milk will be stopped unless it is brought down below 500,000, and I haven't known a case where it didn't come down within a week. We have polluted milk bottles in possession a misdemeanor, and that is working to perfection. We have had to prosecute a few

cases, but the papers show that up and it becomes public property and we have very little trouble. It has a good effect upon the farmers in bringing the milk into the city properly cooled and in a clean condition.

Dr. Park: As to the legal standard of bacteria, so far as I know, the first attempt to make such a standard was established by the New York City Board of Health in 1900. We believed it to be unnecessary for any milk in New York City to contain over one million bacteria. We therefore sent notes to the farms and dealers whose milk contained over that number, telling them that their milk was too old, or too dirty, or kept too warm. This was so indefinite that we decided to return to inspection of conditions. In the first place, it is almost impossible for a farmer to be sure of delivering any given can in summer which will not run over a million bacteria per c.c. So many individuals have to deal with the milk between the farm and the consumer that it is very hard to fix responsibility, and it is unquestionably true that pretty fair milk 48 hours old, if not properly cared for by the railroad or by the dealer, may run over one million bacteria. While, therefore, it is not necessary in one sense to have any such milk, yet as a matter of fact there being so many persons dealing with it, a considerable portion of the milk in summer will have such an excess of bacteria. Even under the very best conditions, such a number of bacteria will occasionally be present. It is impossible, therefore, to actually enforce a legal standard, for the number of bacteria which will condemn milk in a large city without making it too high to be useful.

In Boston, copying the New York suggestion, but going further and making it a legal standard, it is true that two cases have been tested in the courts by the Health Department in two years, but everyone knows that there have been many thousand violations. In smaller cities a bacterial standard might be enforced with advantage, but here the publication of the average counts of the different dealers would, in my opinion, be a much safer method of dealing with the question.

Dr. Goler: I believe thoroughly in the bacterial standard for municipal milk supplies, but it doesn't seem to me that New York City is ready to establish a bacterial standard now. I believe it will improve its milk supply by inspection and then get the standard, but if you follow the footsteps of Boston and get a standard of 500,000 and then don't enforce it, you only do yourselves harm and harm to every city that is trying to establish a standard.

We are attempting to get 100,000 and have been for years, and we don't get now 7 per cent. in 1,100 samples that contain more than 500,000, but if you establish a bacterial standard of high count it will not do you much good and you will do every other smaller city very much harm.

There is one thing in connection with the bacterial standard that is very important, and that is that we haven't paid enough attention to the milk can and if New York City or any other city could establish a plan whereby it could insist by force of law, if necessary, that it should be a misdemeanor for a man to have a dirty milk can or bottle, or to send it out on the railroad, it would be a very good thing. It would tend to materially diminish the large counts in milk. It is due to the dirty can and the dirty dairy. If you can wipe those out you will do a great deal for your milk supply.

In reply to inquiry by mail in regard to questions raised in program under "Legislation," to which so little time could be given at the conference on account of the lateness of the hour, answers were received, of which a summary follows:

As to diseased cattle, the following recommendations: "Tuberculous cattle should be destroyed"; "regular inspection of herds by qualified veterinarians"; "cattle with incurable diseases to be killed"; "veterinary inspector's certificate twice yearly, including tuberculin test, to be produced when called for by inspector"; "some provision to pay for condemned cases of tuberculosis"; "no cattle with diseased ud-

ders may be allowed"; "sufficient appropriations to enforce existing laws"; "requiring efficient inspection and tuberculin test"; "making tuberculin test necessary for all dairy cattle"; "milk from diseased cattle should be classed as adulterated and its sale prohibited"; "proper inspection and destruction of diseased cattle"; "dependent upon nature of disease, some cows should be killed, others quarantined and the milk destroyed"; "appropriation for inspection and tuberculin inoculation"; "confiscation of all such cattle and disposal by public authorities"; "cows should not be admitted to the State without passing test for tuberculosis and after a certain date milk from tuberculin reacting cattle should be excluded"; "more frequent and comprehensive examination—in fact, larger appropriations"; "tuberculin test and exclusion of 'reacting' cows"; "cattle should be tested for tuberculosis before coming into our State."

As to persons producing or handling milk, there was a unanimous expression of belief that milk should not be sent to market from a dairy where any person living or employed on or about the premises has a contagious or infectious disease, and that the same strict rule should apply to all persons and premises where milk is in any way handled in the country or city. Any violation of this rule should be made a misdemeanor.

As to the sterilization of milk cans and bottles being required by law, there were different ways of expressing the same general opinion that all milk containers should be first thoroughly cleansed by some efficient means as soon as emptied, and that such cleansing should be required of all dealers so that they shall be clean when shipped back to the country and that they shall be sterilized immediately before being refilled, by the person or creamery doing the refilling. Sterilization kills germs but does not cleanse or remove dirt.

As to sealing cans at creameries, nearly all thought it desirable, but Dr. Bense! pointed out its "extreme inadvisability," because it would tend to furnish the retail dealer whom they can prosecute here in the city for adulteration with a reference back to the creamery, which is beyond the

Health Department's reach for prosecution. A seal is a good protection as between a dealer and a creamery under contract with each other, but as a matter of administration would be a mistake as to the general milk supply.

In regard to the pollution of milk cans and bottles there was a hearty response that it should be made a misdemeanor.

As to a bacterial standard, there were eight favorable and eight opposed, with four considering it desirable when practicable.

State supervision was considered very inadequate, which was thought in great measure chargeable to lack of State appropriations. Strong efforts should be made to secure State cooperation.

What further legislation? "Bring the State and city laws into harmony. Repeal the State law which permits the sale of milk under standard if produced by cows, which encourages the use of cows which produce large quantities of milk under standard and interferes with the enforcement of regulations requiring standard milk.

Dr. Park: We have practically left the question of diseased cattle out of the discussion. Would it not be well to make some reference to the fact that we have left it out because it is too big a subject to handle?

Commissioner Hebbard: The Department of Agriculture had \$25,000 appropriated last year by the Legislature to look after diseases in domestic animals, among those tuberculosis. A report handed to me a few days ago showed that about 1,400 head of suspected cattle during the last year were examined, and out of that number in the neighborhood of 500 had been condemned.

Now, it is believed by some people that that is not money enough to do this work. It is a subject worthy of your consideration. For my part, I believe the State ought to do a great deal more than it is doing at the present time with respect to this matter. I don't agree quite with Dr. Bensel that the city ought to do all the work, although the State is doing excellent work under the Department of Health at present, as I personally know.

The Chairman: Gentlemen, the hour is getting late. We have not had time with the discussion running along to formulate any agreement under the last three heads that have been discussed. Is there any motion or any suggestion to be made with respect to that and with respect generally to the work of the conference to-day?

Dr. Holt: It seems to me of the utmost importance that the work of this conference should be gathered up and put in a proper shape for reference and for publication, and to that end I move that a committee be appointed by the Chair to take up this end of the work and to act upon it. Unless some step of this kind is taken, a large amount of the valuable material which has come out in this discussion is likely to be lost. There are questions here which interest not only those who are in this room, but a very large number outside, a great many of whom would have attended the conference if circumstances had permitted.

Motion that a committee of five be appointed by the Chair to edit and publish the work of this conference duly seconded and carried.

The Chairman appointed as this committee, Dr. Rowland G. Freeman, Dr. L. Emmett Holt, Ernst J. Lederle, Ph.D., Dr. Linsly R. Williams and Mr. J. E. Sayles.

Motion that the permanent committee to be appointed to cooperate with the Department of Health and County Medical Society, also cooperate with the Teachers College in its plan for a milk exhibit, duly seconded and carried.

The conference then adjourned sine die.

SUMMARY BY COMMITTEE ON REPORT.

The committee appointed to revise, edit and publish a report of the conference, presents the foregoing copy of its proceedings.

The magnitude of the subject and the short time of meeting prevented the formulation and submission at the close of resolutions covering the important topics "inspec-

tion," "education" and "legislation." Brief answers by mail to questions under these headings and in regard to compulsory and commercial pasteurization were asked for and furnished by members, and are given above.

The committee has been requested to present a summary indicating the most important conclusions, and suggesting first lines of action.

Inspection of dairies and creameries was, without doubt, regarded as of the first importance.

To accomplish this with reasonable speed and thoroughness sixty to eighty inspectors in the country are needed. The milk must be drawn from healthy cows under conditions of cleanliness of animals, milkmen, premises, water, utensils and milk cans; must be immediately cooled to at least 50° F., and so delivered at creameries, where it should be handled in a thoroughly sanitary manner and further cooled. Inspection must then follow it every step of the way to the consumer, protecting it from contamination and never permitting its temperature to rise at any stage above 50° F.

The expression was unanimous that nothing can render such inspection unnecessary or reduce its importance.

Equally important is it that all cans and bottles shall be cleansed immediately after being emptied and so sent back clean to the country, where they should be sterilized before being refilled. Closely allied to this is the necessity for improved cans which can be more easily cleaned.

The improvement of conditions in retail stores, while in a great measure covered by "inspection," involves much besides, such as

New regulations as to construction and handling and conditions in stores, all tending to the final establishment of model milk shops.

Infants milk depots are at once of the most vital importance being directly related to infant mortality, and within the possibility of early establishment.

To secure the cleanliness of the vast total milk sup-

ply and its proper distribution is a tremendous task; to obtain 10,000 quarts daily of clean milk and place it within the reach of the people, pasteurized or raw, modified, in feeding bottles, with directions from physicians and nurses, as indicated in the report, is no small undertaking, but is within the power of more than one single philanthropist in this city to render possible within a few months.

Education.—To secure anything approaching the best results to follow such *inspection, improvement in shops and establishment of infants milk depots*, the education of the people must go forward.

They must be taught the value of milk as a food and the absolute need of cleanliness of handling after it comes into their hands.

Every social, educational and philanthropic agency in this city should lend its best aid to intelligent efforts in this direction.

Legislation.—To render possible the accomplishment of these ends regulations and legislation must be secured, city, State and Federal.

A constant and unceasing pressure along all these lines, backed by an enlightened public opinion, is necessary to permanent reform.

ROWLAND G. FREEMAN,
Chairman...
JOHN E. SAYLES,
Secretary.

Committee on Report:

ROWLAND G. FREEMAN, M. D.,
Chairman,
L. EMMETT HOLT, M. D.,
ERNST J. LEDERLE, Ph. D.
LINSLY R. WILLIAMS, M. D.,
JOHN E. SAYLES.

LETTER FROM PROF. LEONARD PEARSON.

UNIVERSITY OF PENNSYLVANIA,
DEPARTMENT OF VETERINARY MEDICINE.
Office of the Dean, Leonard Pearson.

PHILADELPHIA, November 14, 1906.

MR. GEORGE W. WICKERSHAM,
Chairman Milk Conference Committee,
105 East 22d Street, New York:

Dear Sir—In reply to your recent letter, inviting me to attend a conference that is to be held in New York City to consider questions relating to the milk supply, I regret to have to say that I cannot be present because I am starting to-morrow for the West.

The subject that you are to discuss is one in which I am deeply interested, and if you have a later conference on the subject, and if I can be of any assistance, I hope that you will not hesitate to call upon me.

I am convinced that satisfactory milk cannot be secured without some oversight at the seat of production—that is, inspection of herds and farms. Inspectors to do this work well should be very carefully selected; they should be skilled in regard to the diseases of animals and in regard to dairy husbandry; they should have a working knowledge of the fundamental principles of sanitary science, and should know the significance of the teachings of bacteriology. There should be on this force of inspectors a number of competent, well-trained veterinarians and men trained in good schools of dairying.

There are advantages, and there are decided disadvantages, in pasteurization. If milk is sold as pasteurized it should be rigidly required that it shall have been heated to a point that will insure the destruction of pathogenic organisms. It will be well to require that the milk shall have been heated to 80 degrees C. (176 degrees F.), because it can be determined, by a simple chemical test, whether this temperature has been reached or not, and, therefore, whether the pasteurization has been practiced, as claimed. Furthermore, all packages containing pasteurized milk should in some way be distinctly and clearly marked with a label giv-

ing the date and method (time and temperature) of pasteurization. As pasteurized milk often spoils without souring, the consumer does not have the usual *internal evidence of staleness*, and is thereby likely to be misled, and possibly injured, by deteriorated pasteurized milk.

I am very strongly of the opinion that the sale of skimmed milk should be permitted. It is idle to think that New York City cannot control the sale of skimmed milk and prevent its fraudulent sale, as has been done by other cities in all civilized countries. It might be necessary to appoint a few more milk inspectors and it might be necessary, by legislation, to provide severe penalties for all dealers in milk who have in their possession, in shops or wagons, skimmed milk that is not in a characteristically and conspicuously marked container. Having skimmed milk in any other sort of container than that prescribed by law should be regarded as *prima facie* evidence of attempt to defraud, and should subject the dealer to penalty. It would be far better for the city to appoint a few extra inspectors, if necessary, than for the poor of New York to be deprived of this very excellent and cheap food.

In conclusion, I would say again, that the protection of milk from contamination *at the source* is the next important step to be taken in milk control. The supervision of the milk supply under existing laws has served to eliminate to a very large extent the formerly prevalent practice of partly skimming, watering, coloring and preserving milk, and, so long as the present milk inspection is continued, danger from these practices may be regarded as small. Milk is *dangerous* because it is permitted to be *polluted and infected*. It is for the prevention of these contaminations that inspection at the source is urgently needed.

I trust that you will be very successful in your important work.

Sincerely yours,

LEONARD PEARSON.

A. I. C. P.: Epochs of Advance

- 1843 Organization. 1845 Improved housing studies
- 1848 Distribution, among capitalists and builders, of plans for model tenements
- 1851 Projection N. Y. Juvenile Asylum, and founding of DeMilt dispensary
- 1852 Founding of the Northwestern Dispensary
A public washing and bathing establishment, built at a cost of \$42,000
- 1856 A social, moral, statistical census of certain sections of New York City
- 1857 Special investigations regarding cellar residences, defective dwellings, sewerage and filthy streets
- 1860 Popular public lectures on hygiene and sanitation.
- 1862 Founding of the Society for the relief of the Ruptured and Crippled
- 1864 Legislation preventing adulteration and traffic in impure milk
- 1865 Special sanitary measures to counteract the cholera epidemic
- 1866 Absorption into homes of 10,000 soldiers and sailors disabled in the war
- 1869 Projection of improvements in city market, wharves, and piers, which menaced public health by defective sewerage
- 1879 A Committee of Public Hygiene cooperating with the Board of Health in tenement house inspection
- 1886 Opening of a Sewing Bureau for employment of women at their homes
- 1890 Ocean parties to West Coney Island
- 1891 People's Baths, 9 Center Market Place, built at a cost of \$28,000
- 1894 Vacation Schools started. Six in 1895 and 1896, ten in 1897
- 1895 Cultivation of vacant lots by the unemployed
- 1896 Formation of the Improved Housing Council, which organized The City and Suburban Homes Company (capitalized at \$1,000,000)
- 1902 Appropriation by the city of funds to build three public baths in the Borough of Manhattan through the efforts of this association.
- 1903 Longer Fresh Air Season; 20 weeks instead of 8
- 1904 Opening People's Baths, Milbank Memorial, 325-327 East 38th street
Seaside Tent Camp. First American experiment in salt air treatment of little children suffering from Non-Pulmonary forms of Tuberculosis
Visiting Cleaners added to relief staff
- 1905 Report on defective records and accounts, New York Public Schools. Initiative leading to Conference on Hospital Needs and Hospital Finances
- 1906 Committee on Physical Welfare of School Children organized; Agitation resulting in School Census; Pure Milk Crusade; Junior Sea Breeze, Open Air Camp for Sick Babies; Fund of \$250,000 raised for a Permanent Sea Side Hospital

New York Milk Committee

GEORGE W. WICKERSHAM, Chairman

JOHN E. SAYLES, Secretary

EXECUTIVE COMMITTEE

LINSLY R. WILLIAMS, M. D., Chairman

HAVEN EMERSON, M. D.

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